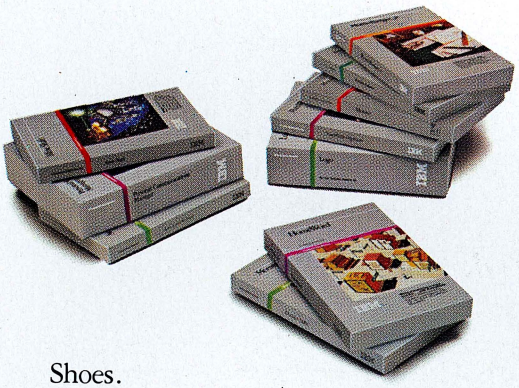
CHILDREN'S TELEVISION WORKSHOP • OCTOBER 1984 • $1.75

enter™

THE WORLD OF COMPUTERS AND NEW TECHNOLOGY

ROBOTS!
A GUIDE TO MODEMS
MARTINA'S COMPUTER COACH

IBM PC Software: the value of choosing



Shoes.
If they don't fit, they're not worth wearing.
Software programs.
If they don't fit, they're not worth using.
That's why it's altogether fitting that IBM Personal Computer Software offers you a choice.

Size up the selection.

You'll find many types of programs in the IBM software library. They'll help keep you on your toes in the office, at home or in school.

There are, in fact, seven different categories of IBM programs called "families." A family of software for business, productivity, education, entertainment, lifestyle, communications or programming.

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programs that fit.

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Now you can find IBM Personal Computer Software that fits — to help you accomplish specific tasks and reach individual goals.

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Ask your dealer to demonstrate your choice of programs. Then get comfortable. Sit down at the keyboard and try IBM software on for size.

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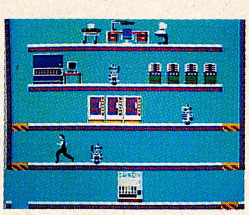


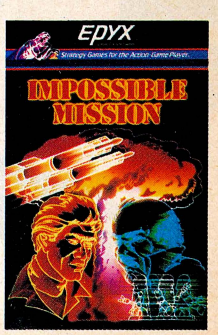
As a member of the exclusive Anti-Computer Terrorist Squad (ACT), your mission is to find and reach the infamous Elvin, who is holding the world's population hostage under threat of nuclear annihilation. You must negotiate a path through the rooms and tunnels of his headquarters trying to avoid Elvin's robot protectors.

Should you try to outrun or jump over the next robot or play it safe and take the time to assemble the codes needed to deactivate the robots and then to find and stop Elvin.

Use your camera to photograph as many clues as possible to find the password which will allow you to penetrate Elvin's control room.

Your Mission—To Save The World, But Hurry!

One player; joystick controlled.



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COMPUTER SOFTWARE

Strategy Games for the Action-Game Player

MENU

OCTOBER 1984

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VOLUME 2, NUMBER 1

FEATURES

LIFE ON-LINE 28
Welcome to the world of computer networking. A first-hand look at how people across the country are communicating with each other by computer. Plus, a kid's view of the on-line life.

PLUGGING IN 34
ENTER's step-by-step guide for getting on-line. Find out about modems, baud rate and on-line services that offer information, games and a whole lot more. Plus a 12-year-old Sysop's own story.

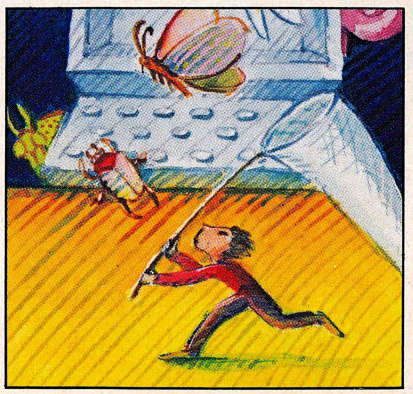
MARTINA'S HIGH-TECH TRAINER 40
A special computer program is helping international tennis great Martina Navratilova get an on-court advantage. Now she's better than ever.

IS THERE A ROBOT IN THE HOUSE? 44
There is in the D'Ignazio family—and it has changed home life in some unpredictable ways. Visit the D'Ignazios and see what it's like to have a robot around the house.

COMPUTERS GO TO COLLEGE 48
High technology meets higher education. Come along with Lisa Partch and Kathy Dawes during their first year on an all-computer college campus.

PAGE 11

PAGE 59



DEPARTMENTS

FEEDBACK: Readers write. 5

BITS: A byte of news briefs. 8

ASK ENTER: Our Help-Line. 10

RANDOM ACCESS: Nerds? 11

USER VIEWS: Game reviews. 14

SOFTWARE SCANNER: Reviews. 18

NEWSBEAT: Computer news. 20

SHOWBEAT: High-Tech Showbiz. 22

PACESETTERS: Musa Mustafa, 17, computer animator. 24

CONNECTIONS: News to use. 26

PENCIL CRUNCHERS: Maze. Micro-Words. 61

INPUT: Your Opinions. 63

PROGRAMMING

BASIC TRAINING: Programs for nine computers. 52

BASIC RECOMMENDS: A book full of game programs. 57

BASIC GLOSSARY: Vocabulary. 58

BASIC PLUS: Debugging. 59

Cover: Photo © Chris Moore

INSIDE STORY

This issue, ENTER takes a close-up look at life on-line—the world of computer networking. Computer networks enable you to make new friends, swap computer tips and news, find out facts, and play long-distance games. But as writer Lindsy Van Gelder points out in our cover story, they may also help you learn something about yourself. Communicating through your computer lets you meet people in a new way. No one makes assumptions based on your age, your looks or your voice. You can even try on different personalities—see what it's like to act young or old, shy or boisterous, an adventurer or a storyteller.

That's one of the best things computers can do for people—give them the power to experiment and create. In this issue of ENTER, you'll meet people who have used that power to play with juggling routines (see "Show Beat"), make animated movies ("Pacesetters"), study ("Computers Go to College"), improve an already great tennis player's game ("Martina's High-Tech Trainer"), and much more.

This month, we are also introducing a new column. Whether you do a lot of programming or a little, "BASIC Plus" should interest you. Written by contributing editor Mark Sutton-Smith, "BASIC Plus" is intended to be a programmer's best friend. And since friends in need are friends indeed, this month's column gives you tips for avoiding a common problem: "the debugging blues."

Finally, this issue marks a birthday: the very first ENTER came out exactly one year ago. Since that first issue, ENTER has grown and changed. We've expanded our programming section from four to eight pages, started a Youth Advisor Board, introduced a news section, and added more hardware and software reviews. Many of these changes came about thanks to the letters, polls and feedback we've gotten from you, our readers.

As always, we're eager to hear from you. Let us know what you're doing with your computers, and what you'd like to see in ENTER. And keep those cards, polls, letters and programs coming in.

Ira Wolfman

Ira Wolfman
Editor

ENTER™

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FEEDBACK

FLOWCHART FOLLOW UP

You know that Flowchart ("The Case of the Meandering Flowchart") in your May issue? Well, I made a computer program out of it, and it worked. It's the best program I've ever done!

—Troy Crossman
Palouse, WA

Dear Troy:

Thanks so much for your program. In fact, we'd also like to thank Peter Schulzetenberg of Annandale, MN, Mike Kozikowski of Adelphi, MD, Jason Holmes of Monmouth, OR, and Levi Stahl of Carmi, IL, for their adaptations of Michael Dayton's perplexing adventure. —Ed

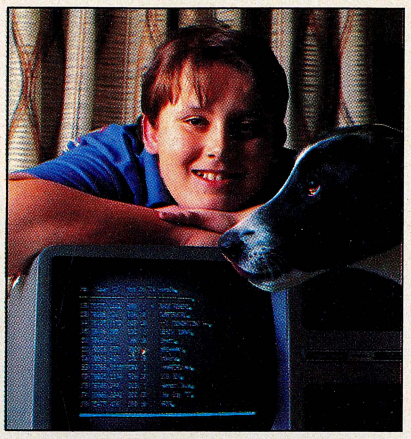
NEAT BEATS

I have received your magazine from its very first issue. I think you have greatly improved. I especially like your new articles "News Beat," "Show Beat," "Pacesetters," and "Connections."

—Sadie McLean
Tacoma, WA

CHIP CHAT CHANNEL

I really enjoyed your "Random Access" article "On-Line Chip-Chat" (May 1984). I thought CompuServe sounded exciting, and my dad had one free hour of it, which he let me use. I "spoke" with Mako, Lusty Guy, TicTac, and Worlock (who didn't enjoy my



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company—he wanted a blank channel). My handle was Sorceress.

We are thinking of subscribing to it, thanks to your article. I didn't know it existed until that issue came along.

—Erika Katz
Pasadena, CA

CHEATING ON CHALLENGES

"Snakepit" [a reader's answer to our Challenge #3 in the July-August issue] is an exciting game. We've enjoyed it for several months already. Unfortunately, we didn't come across it first in ENTER. Dennis Marks wrote "Snakepit" and it was published in the February issue of *inCider* Magazine, as "Serpent."

For someone to "borrow" someone else's program and submit it as their own is piracy. It hurts everyone.

It hurts Dennis Marks, who wrote the program and isn't getting credit for it.

It hurts ENTER, a magazine that is working to encourage original programming.

It hurts us, because the original program we entered in the Challenge had unfair competition.

It hurt all the readers who did not find a new program.

It hurts the reader who submitted it, who will have to live with the embarrassment of taking $50 that wasn't his.

Maybe we should sign a statement that affirms that we write the programs we send to ENTER. We'd be happy to do that.

—Jeff and Chuck Townsend,
Canaan, NH

Dear Jeff and Chuck,

Thanks for informing us about the plagarism of "Snake Pit." Although we can usually weed out Challenge entries that are copies, in this case one slipped by. We are extremely sorry.

The points you make in your letter are good ones. This kind of piracy hurts everyone involved. We are reviewing our Challenge selection process to see if we can further guard against this happening, but in the end, we must rely upon reader honesty. —Ed.

TOO MANY STARS?

I like your magazine, but you always have an article about a musical star that uses a computer to help him. You might have called your magazine: COMPUTERS 'N' MUSICAL STARS. What I'm getting at is I am tired of articles talking about stars.

—Guy Gerald Strong

(Continued on page 6)

FEEDBACK

(Continued from page 5)

ENTER IN 'WARGAMES'?

I just finished seeing the movie *WarGames*. I noticed that the character David found out about Protovision (the cover name for a series of Top Secret government software) in a magazine. Was the magazine ENTER?

—Sergio Keusayan
Long Beach, CA

Dear Sergio:

Oh, that it were true! No, unfortunately, ENTER was not in

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WarGames *because we didn't publish our first issue until a month or two* after *the movie came out, and a full year after filming ended. But* WarGames *has been in ENTER. We covered the movie and interviewed its star, Matthew Broderick, in our very first issue last October.*—Ed.

GOING INTO BUSINESS

Reading your May 1984 issue, I came across the "How to Succeed in Business" section. Now, I am not writing to give you ideas about what to make money on, but to say that the article helped me. Number 11 ("Programming") made me think that I could write a program if I got to work on it right now. Well, that is exactly what I did. I am now working on an addition tutorial, thanks to your article. I should have the program done in a little while if I work on it enough. Well, thanks again for putting out the article.

—Chad Nicely
Kirkland, WA

EXPOS' ROSE

I would like to bring to your attention that in the May issue's "Rate the Greats" you had Pete Rose in a Phillies suit and it said he played for the Expos. I think there's a mistake there.

—Eric Corneliusen
Glendive, MT

Dear Eric:

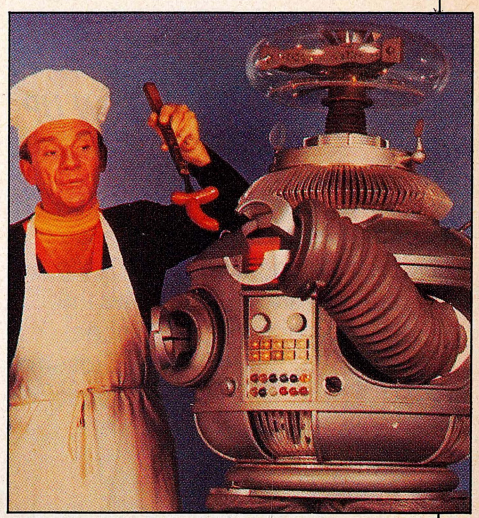
You're right. Pete Rose started playing for the Montreal Expos this season. But when ENTER went to press, we could only get a picture of him in his old Philadelphia Phillies uniform.—Ed

ROBOT REACTION

Your May issue with the "Robot Hall of Fame" was quite thorough. However...you forgot TWO VERY IMPORTANT ONES!!!

I'm sure you have heard of the very popular television show *Doctor Who*. Well, have you heard of the robot dog, K9? He was very instrumental in fighting the Dalek menace.

Also, I don't think you realized the fact that the Recognizers in *TRON* were robots. This mistake is understandable because how many robots do you see flying



MOVIE STILL ARCHIVES

around that are 250 feet tall?

I am an avid *TRON* and *Doctor Who* fan. I am also an avid ENTER fan.

—Matt Haley
Albuquerque, NM

Dear Matt:

It would have been nice to fit every famous robot in our "Hall of Fame." We're just sorry your two favorites were missing. —Ed

ROBOT ROCKERS

In your March issue, a "Bit" titled "Heavy Metal Musician." It ended with the question 'What's next?" A robotic rock band?"

Well, I've seen one. I attended the World's Beyond Convention in 1981 at Falls Church, Virginia. One of the guests had built the Nuclear Diode Robot Band.

—Sally Borden
Baltimore, MD

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BITS

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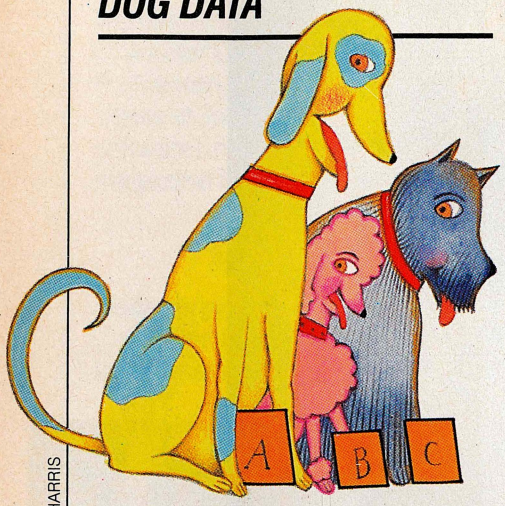

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With oodles of poodles and dozens of dogs, it can be tough to pick the right pooch.

The folks at the Bide-A-Wee Animal Shelter in New York were determined to solve this problem, so they wrote a "Choose-A-Pooch" software program.

Potential dog owners answer a dozen questions about things like the size of their families, the amount of time they have to exercise and groom the dog, etc. This data is fed into the computer and checked against a doggy database. The computer then tells which of 126 breeds of dog are just right for a particular owner.

Sounds like a doggone good idea.

COLLEGE ON A DISC

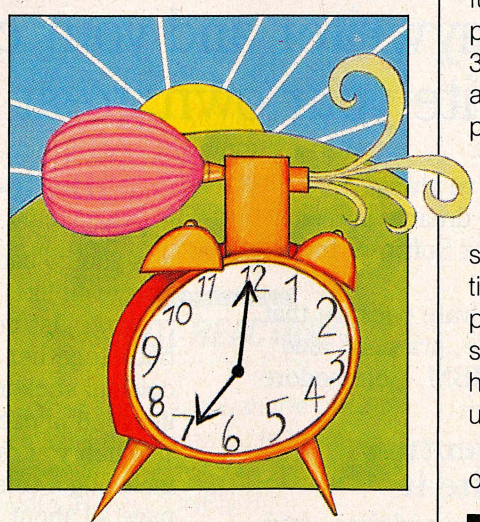
You want to go to college in one part of the country, but live in another part of the nation. That used to make it tough to take a campus tour. But not anymore.

Info-Disc Corp. of Gaithersburg, Maryland is using laser disc technology to let students "tour" colleges around the country. The first disc in this "College USA" series takes students around schools like Penn State, Virginia Tech, and Williams College.

The laser player works on your TV set. It lets you access any scene on the disc almost immediately. So now you can check out a faraway school's chemistry lab, dormitories, marching band, and even a football game without ever leaving your own home town.

It's a whole new way to "go to school."

A SCENTS OF TIME



An alarming new wake-up technology is in the air. It uses no bells or buzzers, but it could get you out of bed smelling like a rose.

It's called the Scent Clock, and it wakes you up by releasing a puff of your favorite aroma. Just fill the atomizer attached to the clock with perfume. When the alarm sounds, the clock releases the perfume.

According to Dr. James Kavoussi and Louis D. Hartford of New York, developers of the Scent Clock, this scent stimulates a sleeper's sense of smell and...sniff, sniff, achoo!...it's wake up time!

RACING COMPUTERS

Ken Bernstein races a special kind of hot rod called a funny car. Now he's using computers to get the last laugh.

Bernstein, who set a national speed record of 260.11 miles per hour, has an on-board computer in his car. Tucked between the fuel tank and the engine, the computer records data for more than 30 different car functions—such as rear axle speed and cylinder pressure.

"When enough runs are fed into the computer, that should give us enough information so we can see exactly what we did to a particular part of the car, on a particular day at each racetrack," says Bernstein. That information, he explains, will "tell us how to set up the car" to go faster than ever.

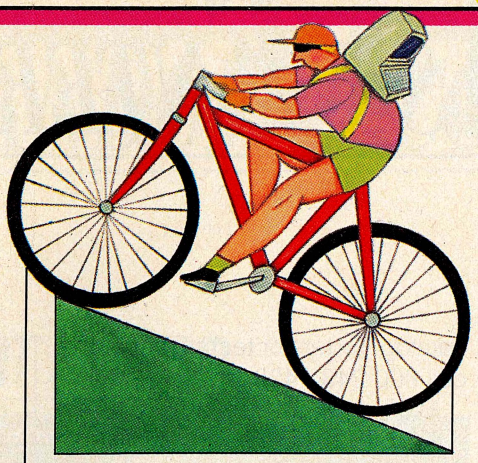
That's getting a lot of mileage out of a micro.

BOOTING UP ROOTS

Is yours the first Apple Computer on the family tree?

Well, now you can use that Apple (or other computer) to look into your family roots. *Lineages*,

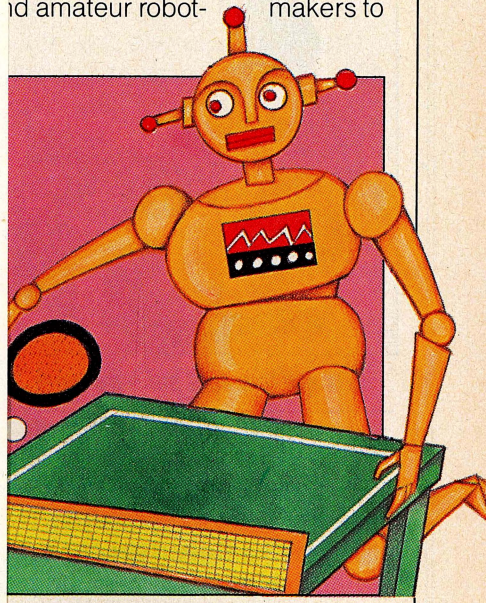
by Quinsept of Lexington, Massachusetts, is a software package designed to help organize your search for ancestors. The program can keep track of 900 different names and print out a four-generation chart.



ROBOT PONG

British robots have challenged American robots to a game of ping-pong. We've got two years to get ready.

The 1986 robot ping-pong match is the idea of Dr. John Billingsly of the Portsmouth (En- and) Polytechnic. He hopes the allenge will inspire professional d amateur robot- makers to



prove basic robot technology. By the time of the match, Bill- gsly believes sensors will be ailable that will let robots "see" e ball. But he doesn't expect uch from the first match.

"In the first year," he says, "I ly expect the robot to return the ll once. In the second year, the bots should be playing rallies, d in the third year they will be aying positional shots."

After that, they might go on nging and ponging forever.

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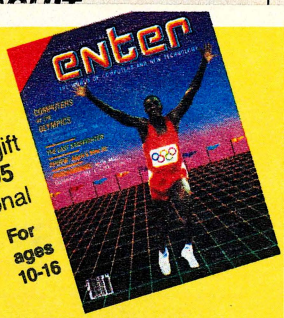

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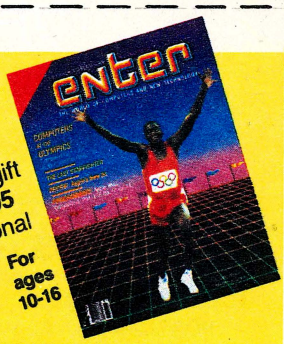

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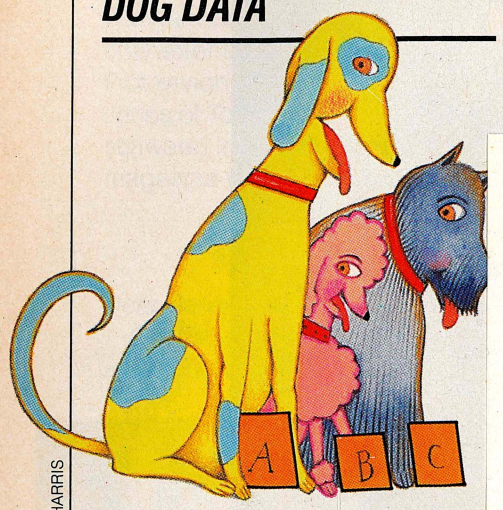

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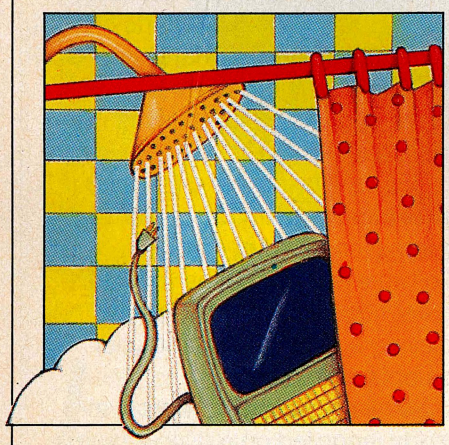
by Quinsept of Lexington, Massachusetts, is a software package designed to help organize your search for ancestors. The program can keep track of 900 different names and print out a four-generation chart.

ALL WASHED UP

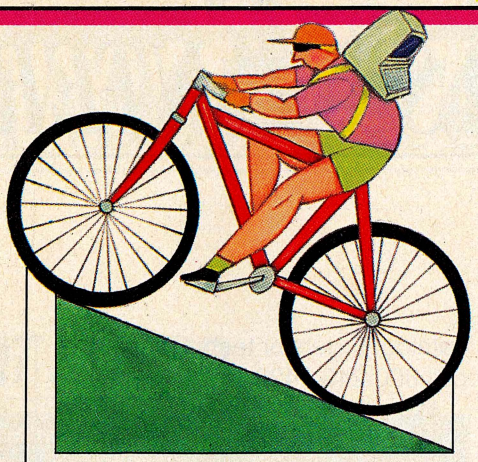
Hewlett-Packard Corporation wanted to prove their new industrial computer could take a licking and keep on ticking.

This special computer terminal



will be used in factories where grease and grime are everywhere. Those gritty conditions could shut down an average machine. So Hewlett-Packard built the H-P 3092A terminal, a computer that's waterproof and completely enclosed. It even uses a flat membrane keyboard so no grime can slip between the keys.

To prove the new computer is tough, Hewlett-Packard researchers tossed it in the shower. That's definitely *not* something you'd do with your own micro. But this industrial computer seemed to enjoy the water..."Pass the soap, please."



CYCLE CIRCUIT

You've heard of people who peddle their goods. Well, here's an example that might make you blow a circuit.

Steve Roberts, 31, of Columbus, Ohio, wanted to find out how computers are changing the way we live. So he strapped his Tandy Model 100 computer and modem onto an 8-foot-long bicycle and started pedaling across America.

As he cycles cross-country, Steve stays with friends he has met through the CompuServe computer network. He also uses the network to communicate with other computer users. The trip, which may take two years to complete, is part of Steve's research for a book he's writing. The title?

Computing Across America, of course.

MICRO KILTS

They're weaving software in Scotland.

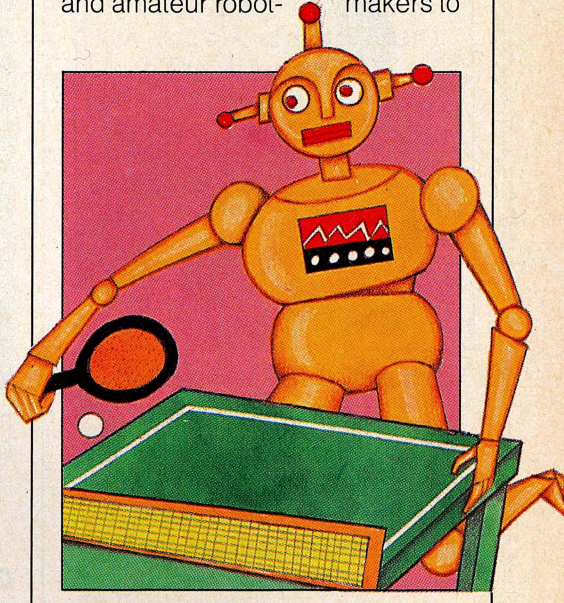
The Scottish College of Textiles has developed a program which lets designers see what a new cloth will look like—without spending a lot of time and money making a test weave. A special graphics computer can reproduce six *million* shades of color.

When the screen design is right, weavers know what colors create a plaid that makes them glad.

ROBOT PONG

British robots have challenged American robots to a game of ping-pong. We've got two years to get ready.

The 1986 robot ping-pong match is the idea of Dr. John Billingsly of the Portsmouth (England) Polytechnic. He hopes the challenge will inspire professional and amateur robot-makers to



improve basic robot technology.

By the time of the match, Billingsly believes sensors will be available that will let robots "see" the ball. But he doesn't expect much from the first match.

"In the first year," he says, "I only expect the robot to return the ball once. In the second year, the robots should be playing rallies, and in the third year they will be playing positional shots."

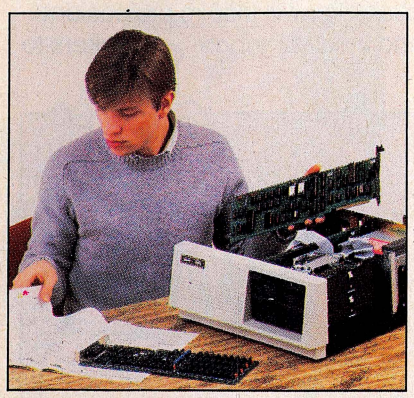
After that, they might go on pinging and ponging forever.

We want BITS! If we use your news, you get an ENTER t-shirt. Send news items to: "Bits Editor," ENTER, 1 Lincoln Plaza, N.Y., N.Y. 10023

ASK ENTER

BY DAVID B. POWELL

DO-IT-YOURSELF COMPUTERS?



Kits are low cost but hard work.

DEAR ENTER: I have read about do-it-yourself computers. Are they any good? How much do they cost and where can I get one?

—Chris Bongart
Columbia, PA

DEAR CHRIS: Kits that let you build your own computer require certain skills. You have to know how to use a soldering iron. You should know—or be willing to learn—about electronic circuits.

Here are some companies that sell kits for computers, robots and other devices.

Heath Co., Benton Harbor, MI, 49022. 616-982-3411.

NRI Schools, 3939 Wisconsin Ave., Washington, DC 20016.

Rhino Robots, 3402 N. Mattis Ave., POB 4010, Champaign, IL 61820. 217-352-8485.

Netronics, 333 Litchfield Rd., New Milford, CT 06776. (For catalog, orders or technical help call 800-243-7428.)

Micro Mint, 561 Willow Avenue, Cedarhurst, NY 11516. 516-374-6793.

Prices for these computer kits start around $90. But be aware that building your own computer is a lot harder than putting together a model plane. If all you really want is to own a home computer, we'd suggest saving yourself a lot of time and energy by getting a low-cost, factory-built model.

VIC 20 VS. COMMODORE 64

DEAR ENTER: I want to know the main differences between the Commodore 64 and the VIC 20.

—David Eisenstein
Brooklyn, NY

DEAR DAVID: The Commodore 64 and VIC 20 are very similar in some respects. Their keyboards are identical. They can use the same disk drive (set at different speeds). However, the Commodore 64, which retails for about $200, has several extra features not found on the less-expensive VIC. These include:

- Sprite graphics that make animation and game design much easier;
- The ability to play three musical notes at the same time in a wide range of tones;
- Expandable memory (up to 64K RAM);
- Better screen resolution (320 by 200 pixels) and a 40-column display, as opposed to 32-column display on the VIC;
- A screen editor for programs or text.

SOFTWARE VS. HARDWARE

DEAR ENTER: What's the difference between software and hardware?

Tracy Tufford,
Port Richey, FL.

DEAR TRACY: *Hardware* generally means the mechanical parts of computer systems. That includes the computers themselves, printers, disk and tape drives, monitors and TVs.

Software takes many forms, but all of them amount to programming of one kind or another. Software is what makes your computer *run*, whether that means playing a game or figuring your parents' taxes.

Software can be a program already recorded on a disk or tape. It can also be a program built into the chips of a cartridge or the circuits of your computer. Or, software can be a printed listing of a program, like those in our "BASIC Training" department.

Hardware can't do anything without software—and software isn't worth anything without hardware. But put software and hardware together, and it can lead almost anywhere.

DAVID B. POWELL is an ENTER contributing editor.

If you have a question about computers, write to: ASK ENTER, ENTER, CTW, 1 Lincoln Plaza, New York, NY 10023.

RANDOM ACCESS

I'M NOT A NERD

© DOUG MENUEZ /PICTURE GROUP

Is this a typical kid who likes computers? Some of my classmates think so.

BY SHELLEY ZULMAN, 14

I am not a nerd. But some kids in my school consider me one—because I like computers, and enjoy using the school's computer center.

I live in Palo Alto, California, the heart of Silicon Valley. I go to a school where 85% of the kids have taken at least one computer class. You'd think that here, of all places, there would be no stigma attached to liking computers.

You'd be wrong.

Many kids I know are embarrassed to admit they like computers. They're afraid it might ruin their reputations.

The computer center is where the problem begins. Anyone who spends time there is considered "nerdy" by kids who don't like computers. As a result, some kids who enjoy using computers never go to the center. Others go, but make a great effort to avoid being seen there. Some actually sneak in and sit hunched in the corner, trying their best to look invisible!

It's always the kids who know nothing about computers—about how useful and fun they can be—who make kids who like computers feel inferior or weird. These computer know-nothings act as though the school's computer center and the people that use it are diseased or something.

Not too long ago, two girls came to the computer center. They stood patiently at the door, waiting to pick up a friend who was working there. When someone invited them in, the girls drew back in horror. One of them said, "I wouldn't go in there if you *paid* me!"

When things like that happen, I try not to let it bother me. Still, nobody wants to feel like a nerd. It's hard to just shrug these comments off.

Once in a while, a teacher will announce over the loudspeaker that the computer center will be open on Saturday. The "anti-computer" kids almost always start making sarcastic comments: "Oh, I can't wait!" one will say. "I *love* spending my Saturdays there."

When this happens, the kids who are interested in going to the center usually remain silent. They're too embarrassed to admit that they might want to spend some time there on the weekend.

Last year, as a joke, my school organized a "Nerd Day." Everybody came to school in nerdy outfits—wearing funny clothing, weird hair styles, bright socks and bicycle helmets, and carrying lunch boxes. These students then paraded across the stage, modelling their outfits. Then, a few kids voted for the nerdiest of the nerds.

The winning nerds got to make victory speeches. One kid's speech was: "Excuse me, but I need to go to the computer center."

I don't wear a bicycle helmet or bright socks, and I haven't carried a lunch box since the third grade. I *do* use computers, though.

Does that make me a nerd?

SHELLEY ZULMAN is a reporter for her school newspaper.

Do you have a computer experience you'd like to write about, or an opinion to share? Send a short note to: Random Access, ENTER, 1 Lincoln Pl., NYC, NY 10023.

WHAT WOULD YOU DO IF YOU

You leave the sun behind as you lower yourself down into the unexplored caverns beneath the Peruvian jungle. Deeper and deeper you go. Past Amazon frogs, condors, and attacking bats. Across eel-infested underground rivers. From cavern to cavern, through level after level. Swimming, running, dodging, stumbling, you search for the gold, the Raj diamond and the thing you really treasure . . . adventure. Head for it. Designed by David Crane.

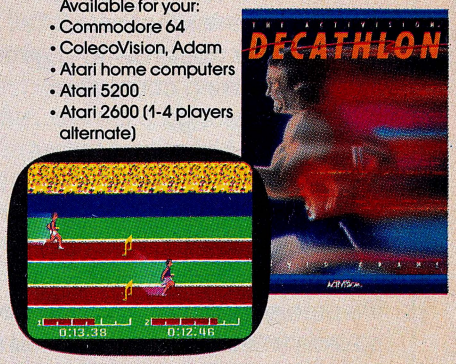
Available for your:
- Commodore 64
- ColecoVision, Adam
- Atari home computers
- Atari 5200
- Atari 2600
- IBM PC jr

As you suit up you see the webbed forcefield surrounding your planet. Holding it. Trapped with no escape. No hope. Except you: The Beamrider. The freedom of millions depends on you. Alone you speed along the grid of beams that strangle your planet. Alone you must destroy it sector by sector. Your skill and your reflexes alone will determine the future of your people. Take their future in your hands. Designed by Dave Rolfe.

Available for your:
- Commodore 64
- ColecoVision, Adam
- Atari home computers
- Atari 5200
- Atari 2600

You made it. The Olympics. You hear languages you've never heard. And the universal roar of the crowd. You will run. Hurl. Vault. Jump. Ten grueling events. One chance. You will push yourself this time. Further than ever. Harder than ever. But then . . . so will everyone. The starting gun sounds. A blur of adrenaline. The competition increases, now two can compete on screen at the same time. Let the games begin. Designed by David Crane.

Available for your:
- Commodore 64
- ColecoVision, Adam
- Atari home computers
- Atari 5200
- Atari 2600 (1-4 players alternate)



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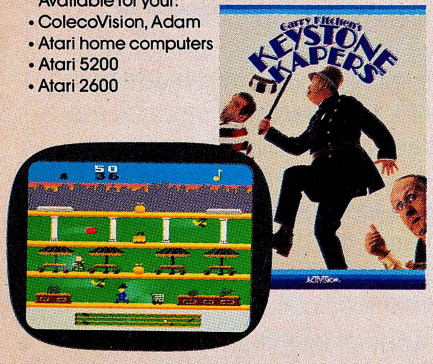
IBM® and PCjr are registered trademarks of International Business Machines Corp. © 1984, Activision, Inc.

WERE IN THEIR SHOES?

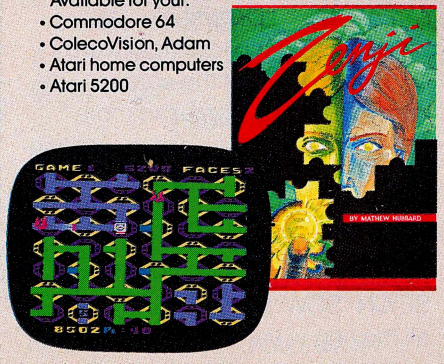
You've put on your badge, grabbed your nightstick and headed out. But what's going on in that department store? A good old-fashioned chase that's what. You've got to catch the greedy little burglar who keeps throwing beachballs, toy airplanes and shopping carts in your path. Up the escalators. Down the elevators. From floor to floor. There's something funny going on here. Take charge of the investigation, lieutenant. Designed by Garry Kitchen.

Available for your:
- ColecoVision, Adam
- Atari home computers
- Atari 5200
- Atari 2600



You have heard the elder speak of one central source and a maze of unconnected grey paths. As you connect each path to the central source, what was grey becomes the green of life. When all are connected, then you have achieved "Zenji." But beware the flames and sparks of distraction that move along the paths. You must go beyond strategy, speed, logic. Trust your intuition. The ancient puzzle awaits. Designed by Matthew Hubbard.

Available for your:
- Commodore 64
- ColecoVision, Adam
- Atari home computers
- Atari 5200



You prepare for what may be your last take-off. Negotiations have failed. The Dreadnaught moves in. You must attack. No single hit will stop it, you must destroy individual energy vents, individual engines. Approach. Attack. Swerve away. Again and again. An evil enemy inhabits the massive Dreadnaught. And you alone, a small speck in the vastness of space, fly out to meet it. Get on board, your ship is ready to leave, sir. Designed by Tom Loughry.

Available for your:
- Atari home computers
- Atari 5200

ACTIVISION®

We put you in the game.

USER VIEWS

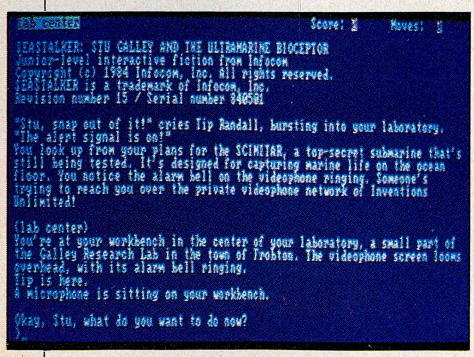
NEW COMPUTER GAMES

BY PHIL WISWELL AND BERNIE DEKOVEN

SEASTALKER

(Infocom, Apple II, $39.95-59.95, also available on most home computers)

This is Infocom's first text adventure designed specifically for younger players. But don't think


Score: 0 Moves: 0
SEASTALKER: STU GALLEY AND THE ULTRAMARINE BIOCEPTOR
Junior-level interactive fiction from Infocom
Copyright (c) 1984 Infocom, Inc. All rights reserved.
SEASTALKER is a trademark of Infocom, Inc.
Revision number 15 / Serial number 840501
"Stu, snap out of it!" cries Tip Randall, bursting into your laboratory. "The alert signal is on!"
You look up from your plans for the SCIMITAR, a top-secret submarine that's still being tested. It's designed for capturing marine life on the ocean floor. You notice the alarm bell on the videophone ringing. Someone's trying to reach you over the private videophone network of Inventions Unlimited!
(lab center)
You're at your workbench in the center of your laboratory, a small part of the Galley Research Lab in the town of Frobton. The videophone screen looms overhead, with its alarm bell ringing.
Tip is here.
A microphone is sitting on your workbench.
Okay, Stu, what do you want to do now?

the "Junior Level Interactive Fiction" label means the game is easy. It isn't. What sets *Seastalker* apart from other Infocom text adventures is the help available to players who get stuck.

Seastalker takes place in the seaport community of Frobton Bay. You are in your bayside research lab when a message comes in that the Aquadome is under attack. The only hope for you is to find things in the lab, launch a well-equipped submarine, then find and defeat the enemy.

A nautical chart of Frobton Bay is included in the package along with other maps. There are also eight clue cards and a special decoder for reading them.

WRAP-UP

PHIL: When I saw it described as for "ages nine and up," I figured the game would be an afternoon's work. I was wrong. Kids may love this, but it isn't just kid's stuff.

BERNIE: The world of *Seastalker* provides lots of things to do for fun, like exploring shipwrecks or tinkering with experimental lab equipment.

WORDFLYER

(Electronic Arts, Atari computers, $35)

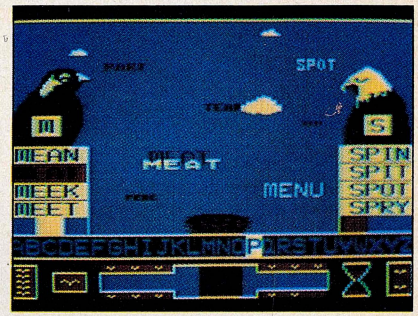
Most word games have very little action. The ones that do usually aren't very good. *Word Flyer* is the exception. It is strategic and educational, but it's also filled with fast and furious action.

There are large birds on either side of the screen. Beneath each is a word tower containing four different letters or words. Players select one and "fly" it around the screen with their joysticks, attempting to "tag" identical words as they appear on the screen. The faster you tag a word, the more you score.

It may seem strange that a game with words is this challenging, but it is. When the screen is abuzz with words like SEWS, SEWN, SOWN, SOAR, and SORE, all moving in various directions, you'll thank your stars for no five-letter words.

WRAP-UP

PHIL: Some of my eye muscles and brain cells that rarely get used were snapping to attention



when I reached the fourth or fifth (highest) skill levels.

BERNIE: The zooming words are pretty, the vocabulary is exciting and player control is ideal. But I thought matching colors and words got in the way.

EL-IXER

(Isoft, Apple II series, IBM PC, PCjr & IBM compatibles, $29.95)

Ex-Ixer is an abstract strategy board game for two players. You must have a human opponent because, unfortunately, the computer is not set up to play against you.

The playing board is made up of 14 x 14 squares, all of which are initially white except the four corners. There are *no* pieces to move. To take possession of the squares, the player must press the fire button or action key before a timer runs out.

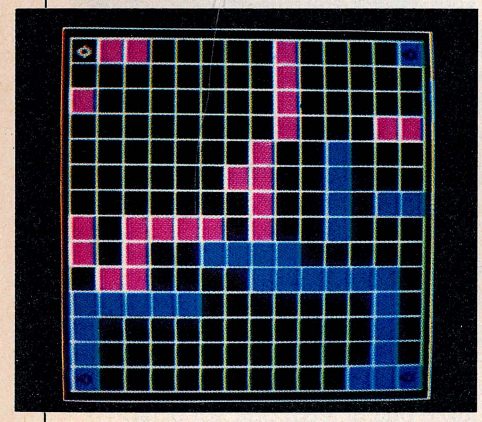
The four corner squares, known as the el-ixirs, are the most important. You can't score any points

without capturing at least one of them. When you connect a chain of squares to an el-ixir, your score increases by the number of squares in that chain. You can capture your opponent's squares by surrounding them. The winner is the first player to have 99 squares connected to the corners, or the player that captures all four corners.

WRAP-UP

PHIL: This game features a fairly equal blend of skill and luck. As in backgammon, strategy lies in using the odds in every situation.

BERNIE: I thought the element of chance was too great. That defeats some of the interesting strategies. That aside, the game is genuinely fun.

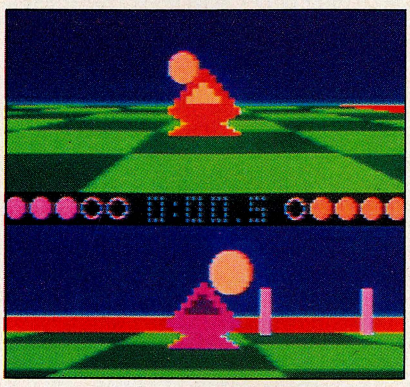


BALLBLAZER

(Atari, all Atari computers, cartridge, $44.95; Atari 5200 cartridge, $39.95; also for Atari 7800 ProSystem)

Lucasfilm, creator of the *Star Wars* movies, has done it again. Their first game creation is innovative, challenging and simply fun to play.

Ballblazer is a kind of fantasy soccer match. You try to move a giant ball down a checkerboard playing field towards a distant goalpost. Meanwhile, your opponent is trying to capture the ball



and race downfield for a score.

This game has several impressive features. The most obvious is the split screen effect. The top half of the screen presents one player's view; the bottom displays the other player's view from the opposite side of the field. To move strategically down the field, you have to keep an eye on both screens. That definitely adds to the challenge.

Ballblazer also has some wonderful visual effects. The way the screen scrolls as you maneuver over the field creates a marvelous illusion of movement. If you bump into the other player or into the invisible walls that border the field, the whole screen shakes as if you've really been hit with a jarring blow.

Last, but not least, is the music. It's fun, funky and keeps the whole game hopping.

WRAP-UP

BERNIE: Graphics and music are wonderful and nicely matched to the spirit of the game. I also like the way the goalposts move around to make it more difficult to score.

PHIL: This is a good two-player game, but the controllers that come with the 5200 detract from the game because they don't return to a center position. I think *Ballblazer* will be better on other systems.

THE MASK OF THE SUN

(Brøderbund, Commodore 64, $40, also for Atari computers and Apple II)

If you like graphic/text adventures with engaging story lines, difficult puzzles, and stunning high resolution pictures, then *The Mask of the Sun* is your kind of challenge.

As an archaeologist/treasure hunter in Mexico, you'll feel much like Indiana Jones. You must race your arch-rival to recover a great treasure—the solid gold Mask of the Sun.

Commands like LIGHT LAMP or WALK NORTH THEN ENTER HUT

are typed into the keyboard. The response will either lead to a new picture or give additional information.

You'll be stuck outside entrances for hours because your guide is fond of responding to questions with "I don't know." At least he speaks many languages. You should learn, too. If you think English alone will lead you to the Mask, think again!

(Continued on page 16)

USER VIEWS

(Continued from page 15)

WRAP-UP

BERNIE: I liked the graphics of the game. When you drive the jeep from one scene to another, for example, you get a short "slide show" of the road from different angles. Objects disappear or change before your eyes.

PHIL: It does bring life to the game, but the animation lengthens the wait between scenes in the long run.

KING'S QUEST

(Sierra, IBM PC and PCjr, $50)

This is the first graphics adventure with joystick action. In *King's Quest*, your character—Sir Graham—can walk, run, swim, attack, and talk. You'll need all this action to help Sir Graham recover three treasures that have been stolen by wicked trolls.

There are many ways to solve the puzzles of the game. The more complex the solution, the more points you earn. This means the game is replayable even after you solve it.

Movement from one scene to another is accomplished with a combination of joystick and keyboard commands. Animated cartoon sequences within some scenes keep this adventure a lively and moving experience.

WRAP-UP

BERNIE: Your ability to interact in so many ways with the other characters gives *King's Quest* exceptional depth.

PHIL: I enjoyed finding solutions to the puzzles in *King's Quest*. This is a great fantasy.

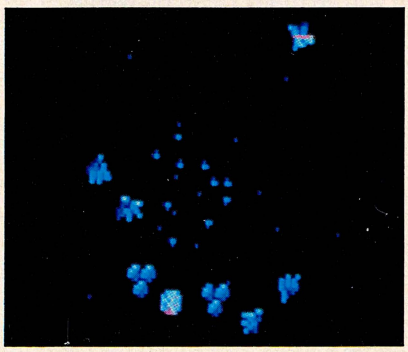
GYRUSS

(Parker Brothers, Atari computers, $30-40 depending on system, also for Atari 2600, 5200, Commodore 64)

Parker has done a very nice job of translating *Gyruss* from arcade to home screen. We can't find much to complain about in this game. *Gyruss* is a very simple shoot-'em-up, but its mechanism is unusual and refreshing.

Moving the joystick left or right will swing your ship in a large circle around oncoming obstacles. Pressing the fire button releases a shot aimed right at the center of the screen.

The game begins when your ship is beyond the planet Neptune and ends when you reach Earth or lose all your ships. The object of each round of play is to blast or dodge the waves of enemy ships, satellites, and asteroids that are generated from the center of the screen.



WRAP-UP

PHIL: I know that *Gyruss* isn't really much more than just another shoot-'em-up fantasy, but something about this cartridge keeps calling me back for "one more game."

BERNIE: It's a combination of the classical music, the ultra-smooth control of your ship, and ever more difficult levels of play.

SLAMBALL

(Synapse, Commodore 64, $34.95)

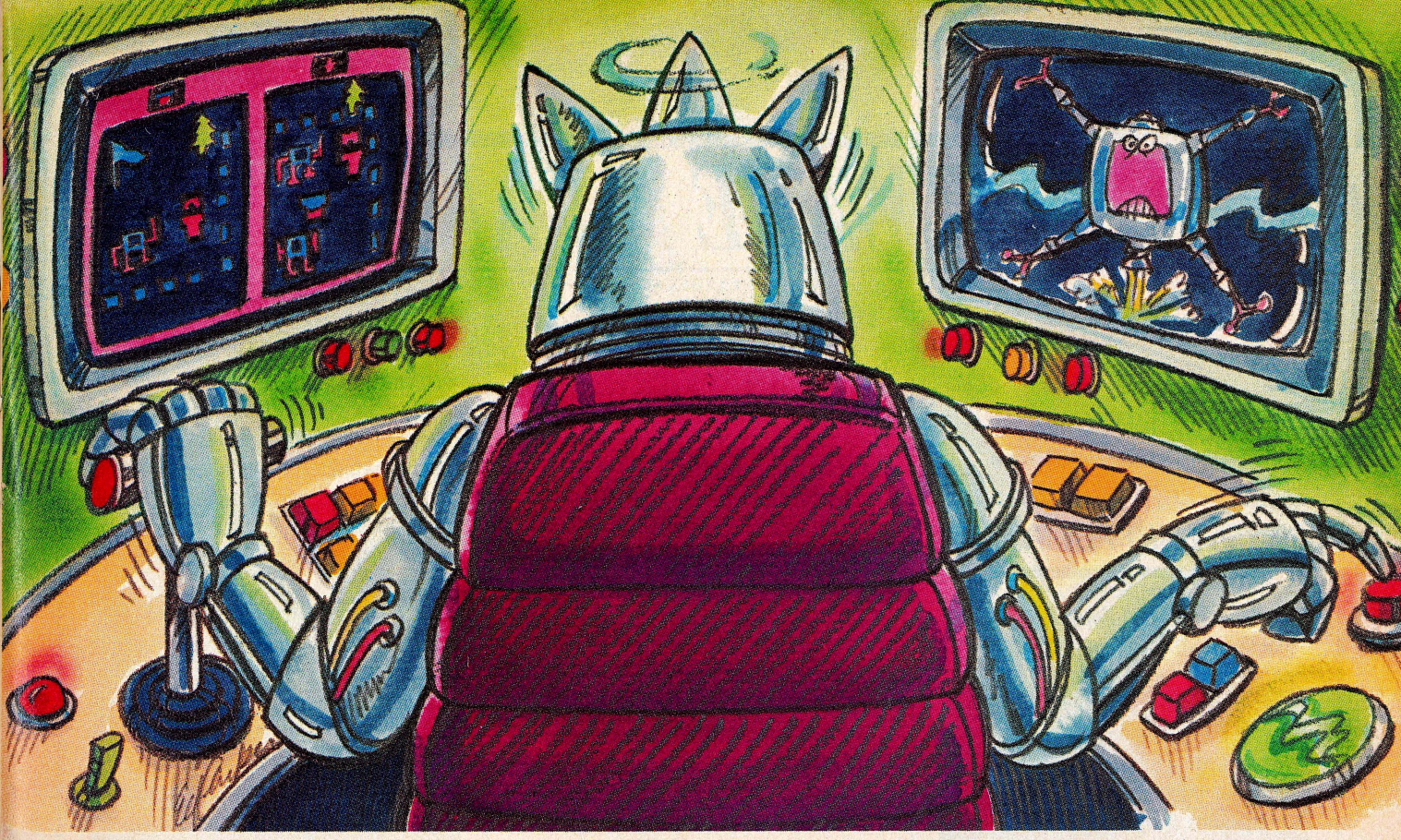
Slamball is a variation on computerized pinball. The playing table is one screen wide by four screens tall. The display scrolls along with the position of the ball.

Each vertical section of the table has at least one set of flippers. To play well, you must master the ability to kick the ball from a lower set of flippers to the set above. And, of course, you must learn "body English" to nudge the ball this way and that.

WRAP-UP

BERNIE: *Slamball* is a very good pinball game. You can really get hooked on complexities and combinations.

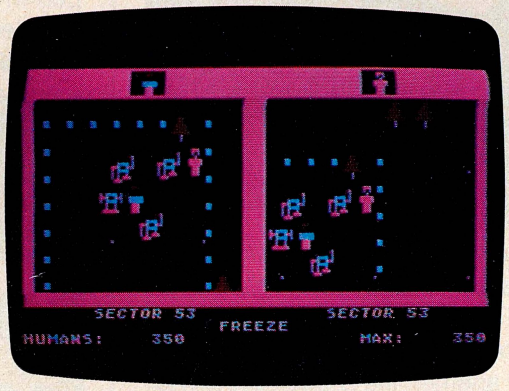
PHIL: This new direction for computer pinball seems very strange at first—sort of like playing real pinball wearing blinders. But I've grown to love the idea.



Show us the face of Max the Master Robot. And you may win your own talking robot.

Team up with a friend to defeat Max and his robot raiders in Bannercatch.

Only a handful of people have ever seen the face of the robot leader Max. Defeat Max and his demon robots and you'll join this elite group. And you and your teammate can win two walking, talking robots you can program yourself.



You'll battle Max and his robot marauders in a field bigger than any you've ever seen. Your team must invade robot territory and grab their flag before they take yours. But be careful; Max has devised a fiendish strategy against you. And, of course, you can't expect mercy from robots.

To make things even tougher, Max has taken a vow not to reveal his face until you conquer all his robots. Including Zweli the Invisible.

You'll need to learn binary numbers, map reading and, above all, how to work with your teammate if you want to win. But even if you go down to defeat, you may win two tickets to your favorite local sports event. See the package for contest details.

You can pick up Bannercatch where you buy software. Or write to Scholastic Inc., Dept. EW, 730 Broadway, New York, NY 10003.

But please remember, only a handful of people have gone face-to-face against Max and survived.

Scholastic

The Most Trusted Name in Learning

Available for Apple, Atari, Commodore and IBM.

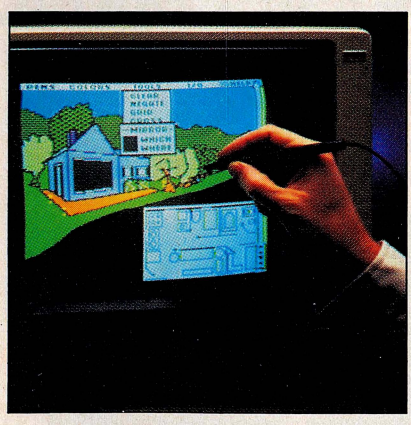
SOFTWARE SCANNER

BY HILDE WEISERT

GIBSON LIGHT PEN SYSTEM

(Koala Technologies, Apple II computers (not IIc), $249.95; Scaled-down version, with only animation and paint programs for Commodore computers, $99.95)

This is a thoughtfully designed light pen with special features, a lot of power—and a much higher price tag than you'll find on many



other pens. Why would anyone spend this much for a light pen?

For one thing, this is a quality pen that is very easy to handle. For another, the Gibson system is more than just a pen and graphics package. It comes with four additional software programs built in.

"Penpainter," the basic draw-and-paint program, is smooth and easy to use. Unlike many other pens, you don't have to hold a key or a clicker down while you draw with the Gibson, and there aren't any choppy lines where the pen follows along like a new puppy jerking the leash.

"Penaminator" isn't the ultimate animating program, but it is a nice introduction to animation. "Pendesigner" enables you to create designs, charts, diagrams, and technical drawings. "Penmusician" lets you hear each note as you move the pen along a scale. And "Pentrak" is a language that lets you build light-pen applications into your own Applesoft programs.

The system is not perfect. For instance, you have to run "Pendesigner" to move or copy outlines or to draw close-up. And the pen will sometimes get sticky, balking at a menu choice until you twist your hand around.

The question remains: should you buy this higher-priced light pen when there are other good (and less expensive) light pens around? Yes, if you or a family member will be doing complex drawing, drafting, or chartmaking. And yes, if you (or they) will be doing serious graphics programming. If those are your needs, then you won't be wasting the unique power that you're paying for.

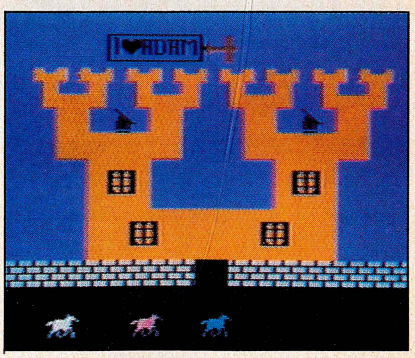
SmartLOGO

(Coleco, Adam; $50)

SmartLogo takes you from basic (not BASIC) Turtle graphics all the way to complex LOGO programming. The nine disk tutorials are *real* tutorials, not just screens filled with text.

If you're not familiar with the Logo drawing device, "Meet the Turtles" will quickly have you marching it around, tracing colorful shapes. Before you know it, you'll be using programming tools that send the screen turtle into dizzying spirals and animated graphics.

Actually, *SmartLogo's* turtle is something of a chameleon. It can change into 30 other shapes, including flowers and dogs and rockets. And *SmartLogo* offers more than graphics. A hefty 300-page reference manual is included to guide you through the math and programming tools



on the disks. *SmartLogo* also allows you to print or save what you create in files or on another data pack.

With its wide range of possibilities, this version of Logo should be popular with everyone in the family.

WIZTYPE

(Sierra, Cartridge and disk for Commodore 64, disk for Apple, IBM PC and PCjr; disk, $34.95, cartridge, $39.95.)

This program doesn't expect you to blast letters out of the sky. *Wiztype* pits the Wizard of Id—

and your fleet fingers—against a dastardly spirit that spews letters out across the screen. Keep pace, and the spirit turns pale and fizzles out. Slow down, and the spirit becomes a nasty green dragon that melts the Wizard with

its fiery breath.

Six activities cover various typing skills. In the game mode, letter combinations speed up at five words per minute (wpm) as you master each level. In other modes, you can change the speed from 10 to 60 wpm.

Wiztype also mixes in two-line sentences every few levels. It lets you practice longer passages by typing in your own paragraph or copying program selections.

Wiztype features a handy reference card and on-screen prompts that help to guide your fingers around the keyboard. You can create your own lessons of up to 240 words. And there's a typing scoreboard that keeps track of your speed and score. Each time you load the program, a graph displays your previous top score.

There's even a special appearance by Bung the jester, who helps you set a typing rhythm by letter-hopping with his pogo stick. As long as you don't get tired of the Wizard, the dragon, and the jester, you'll be pleased with *Wiztype*'s flexible features.

FACT AND FICTION TOOLKIT

(Scholastic; Apple Computers with extended 80-column card; disk; joystick; $39.95)

Fact and Fiction Toolkit is really two programs. *Story Maker* lets you write and illustrate your own stories. *Secret Filer* lets you create your own computer records of stamp collections, books, friend's addresses and the like.

Story Maker features eight different type styles, including Old English, gothic and computer-modern. It also has a "Gallery" that features a whole screenful of props and characters (airplane, sports car, animals and more) that you can place anywhere on your story page. If you want to draw your own pictures, *Story Maker* gives you two-line widths and 16 colors. But, be warned: if you don't have an Apple Imagewriter, you can't print out your work. (A new version of this software,

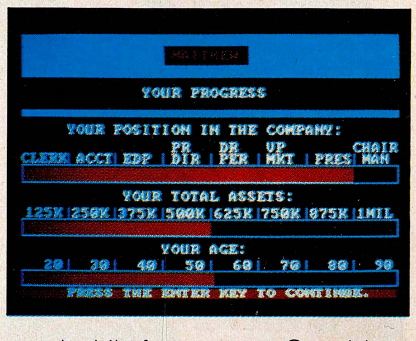
scheduled for release this fall, should run on other printers.)

Secret Filer, however, will print your cards out on most printers. But the printout must be done one document at a time. *Secret Filer* is a good first step into the world of data base management. Don't be surprised if your family starts asking you to use this software to keep track of things for them. By the way, where *did* I put my glasses?

KNOWARE

(Knoware Inc.; Apple II+, IIe, IIc, IBM PC & XT, DEC Rainbow; disk; $95)

This is a package aimed at businessmen who are afraid of computers, but it might be


YOUR PROGRESS
YOUR POSITION IN THE COMPANY:
CLERK ACCT EDP PR DIR DR PER VP MKT PRES CHAIR MAN
YOUR TOTAL ASSETS:
125K 250K 375K 500K 625K 750K 875K 1MIL
YOUR AGE:
20 30 40 50 60 70 80 90
PRESS THE ENTER KEY TO CONTINUE.

worthwhile for you, too. Consider getting *Knoware* if: (A) You suffer from computer anxiety or (B) You want a clear, friendly introduction to BASIC programming and "applications" software.

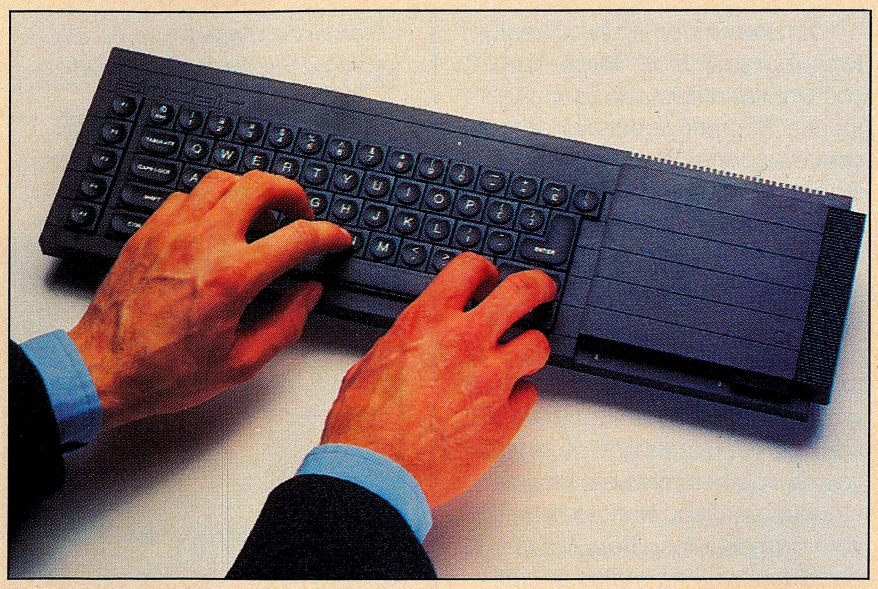
Knoware presents its lessons in the form of a business text "game." You begin the game as a mail clerk, and your goal is to work your way up to Chairman of the Board. You have to use a data-base to find out some famous people's birthdays, write a simple BASIC program to build a wall that will stop a thief, and juggle numbers in a spreadsheet.

When you've finished with *Knoware,* you will be able to approach most applications software without fear. However, the claim on the box that "*Knoware* gives you...useful applications programs" is misleading. The programs here are fine for learning, but are too limited for real use.

NEWS BEAT

BY RICHARD CHEVAT & SUSAN JARRELL

SINCLAIR QUANTUM LEAPS TO U.S.



Sinclair's Quantum Leap has 128K for under $500.

Which company has sold the most home computers world-wide? If you said Commodore, Apple or IBM, you're wrong. The Sinclair Research Limited Company of Great Britain holds that honor. And now Sinclair, which already has sold its 1000 and 1500 models to Americans, is introducing its newest computer here—the QL, or Quantum Leap.

Until last April, Sinclair's best-selling computers were made and sold in the U.S. by Timex. But in a sudden move, Timex got out of the computer business completely. So now Sinclair itself is selling the QL in America.

The QL, already a big hit in England, comes with 128 K. It uses an advanced microprocessor similar to the one found in Apple's Macintosh. The QL comes with its own word processing, spreadsheet, graphics and database software. It also has a bonus for programmers—an excellent version of BASIC that includes some Logo-like functions.

The most impressive feature of the QL may be its $499 price. There is a hitch or two, however. This Sinclair is being packaged as a business machine. Game and other home-use software will probably be limited. And don't expect to see the QL on store shelves next to Commodores and Ataris. Sinclair plans to sell the QL in the U.S. by mail-order only.

For more information, write to: *Sinclair Research Limited USA, 50 Staniford Street, Boston, MA 02114.*

TEXAS COMES TO CALIFORNIA: There may be good news for the two million owners of Texas Instruments (TI) computers. TI has signed an agreement with Triton Products that allows that San Francisco, California, company to begin marketing hardware and software for the TI 99/4 and 4A. As part of their agreement, TI has sold its remaining stocks of 99/4A products to Triton. Triton is mailing catalogues to all TI owners. The catalogues will include complete listings of Triton's stock of TI products and of other third-party products for the computer. Catalogues are available by writing:

Triton Products Company
PO Box 8123
San Francisco, CA 94128

In addition, Texas Instruments will continue to honor warranties on its computers and will continue to maintain its toll-free customer support line, 1-800-TI-CARES. However, it will no longer sell any 99/4A products.

BLINDED BY SCIENCE: A new series of games from CBS Software lets you travel through time, explore light beams, tame hurricanes, and—if you're feeling really adventurous—choose your own style of feet.

In *Light Waves*, you guide "Lightriders" through an energy-field maze that changes as you play. *The Argos Expedition* puts you at the controls of a spaceship on a long intergalactic voyage. *Timebound* is a past/present/ future game. In it, you must retrieve your assistant Anacron, who has

mistakenly entered the time machine. You'll catch him by answering historical questions in 11 different categories.

Is a good race more your speed? Then there's *Fleet Feet,* a game where players have to choose their feet. Each pair has its own style of running. You have to keep on your toes and out of the way of oncoming obstacles.

The *Fleet Feet* software is only available for the Commodore 64. *Light Waves* is available for Commodore and Atari computers, and *Timebound* is available for Atari, Commodore 64 and IBM PCjr computers.

TRIVIAL SOFTWARE: Interested in a game that tests everything you never knew you knew? Then you'll want to pursue some new trivia software games.

This software tests the user's knowledge of insignificant facts about sports, music, television, science, and general knowledge. New trivial games include Professional Software's *Trivia Fever* ($39.95; Apple II micros, Commodore 64, IBM PC, PCjr, and TRS-80), Screenplay's *The Trivia Arcade* ($34.95; Commodore 64, Atari, Apple Micros, IBM PC and PCjr) and Coleco's *Flash Facts Trivia* ($15.95; Adam).

WHALE WARE: Whales—and computers—are the stars of a new TV series. *The Voyage of the Mimi* takes viewers on a whale-watching expedition where computers play an important role. In addition, the producers of the show have developed computer software that allows you to learn about whales on your own time.

The series, which begins the week of September 10, will run for 13 weeks on PBS stations. Each

©BANK ST. COLLEGE/HOLT, RINEHART & WINSTON

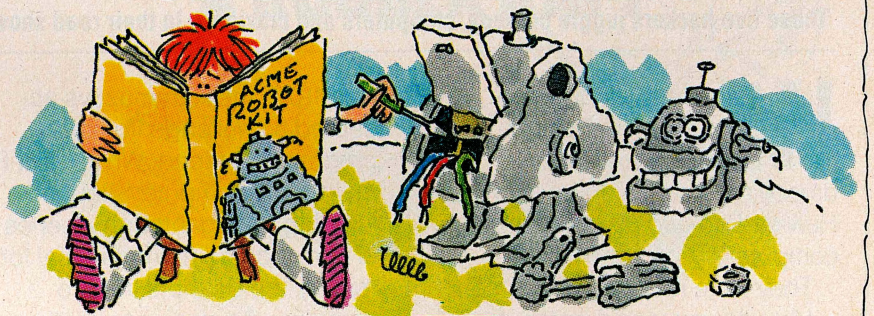
Whale disks: flipper floppies?

half-hour segment combines a 15-minute story about a whale-watching expedition with a documentary-style "voyage" into a related topic.

The *Mimi*'s crew is made up of four teenage students, two marine biologists and a crusty old captain. During the expedition, the crew uses computers to study whale habits, record sightings, and identify whales they've seen before.

Like the show, the special computer software and books are being produced by Bank Street College and Holt, Rinehart & Winston. Subjects include maps and navigation, whales and their environment, ecosystems, and computing. While the first set of software is designed for classroom use, a similar package of texts and software will be available for Apple home computers by early 1985. Sounds like a whale of a project.

HOW TO MAKE FRIENDS ON OTHER PLANETS



First, go to another planet. (That's easy if you're traveling through space in PLANETFALL,™ the great science fiction comedy from Infocom's interactive fiction line.)

Next, find a robot nobody's using. Then, to make him start up, type in your command: TURN ON THE MULTIPLE PURPOSE ROBOT... You've just made a robot friend who'll follow you anywhere.

And you'll be glad you have a faithful follower—there's no telling what will happen next in PLANETFALL. Because, like all of Infocom's interactive fiction, PLANETFALL's designed so that whatever *you* choose to do affects what will happen next. And there'll be plenty happening—it's an adventure filled with everything from dread diseases to mutant monsters, and it can last for weeks or even months.

Get the closest thing on a disk to really going into outer space. Get PLANETFALL*. It's not just a great adventure—it's a great way to make friends!

INFOCOM™

*It's compatible with almost every popular home computer. PLANETFALL is a trademark of Infocom, Inc.

SHOW BEAT

EDITED BY PATRICIA BERRY

JOYSTICK JUGGLERS

These five hackers juggle comedy, computers and craziness in their road show.

What were five jugglers who look like Russian Cossacks and wear droopy mustaches doing with that Hewlett-Packard 85 mainframe computer?

They were racing it, of course.

How do you race a computer? Just ask the **Flying Karamazov Brothers**—five fun-loving jugglers who aren't really brothers, but who will juggle anything handed to them.

The Karamazovs are a touring act who've done their fast-moving juggling comedy shows on the Broadway stage, at rock concerts, and even on street corners. Juggling may not sound like a computer event, but the Brothers have been computing for nearly as long as they've been juggling.

In 1977, the Karamazovs accepted a challenge from a programmer friend. While an H-P mainframe computer simulated juggling (going through a series of complicated mathematical formulas), the Brothers tried to complete the routine faster than the machine.

"We finished before the computer, but not by much," says Brother Randy Nelson. "These days, computers are much faster....I'm not so sure we'd win the race in 1984."

While the mainframe juggling challenge was one of the Flying Karamazov Brothers' great computer moments, it was not their first—or last—run-in with computers. In fact, this troupe virtually talks in "computer-ese." And all the Brothers—Paul Magid, 29, Randy Nelson, 30, Timothy Furst, 32, Sam Williams, 30 and Howard Patterson, 28—are hackers.

"Everyone in the group, except for Tim [who was once a computer programmer] has his own personal computer," says Sam Williams. That translates to a Kaypro, two Commodore 64s and two Radio Shack Model 100s. A few of these machines travel along on tour.

"Since we're on the road so much," explains Howard Patterson, "we decided to simplify matters and share one printer." That might cause compatibility problems for some, but not for the Brothers. A little re-wiring hocus-pocus and their jointly-owned Epson RX80 accommodates each computer.

The most dedicated Karamazov computer-user is Randy Nelson. When Randy was on leave from the act last year, he tried programming a robot in a style he called "computer vaudeville." Randy programmed an eight-foot computerized lion robot to sing and dance to Elvis Presley tunes for the Pizza Time Theater restaurant chain.

Computers also play a part in the Brothers' plans. In the near future, they intend to use one of their computers to write English subtitles for a skit spoken in fake French. The plan is to broadcast it on monitors in the theater. The effect will allow them to make even more puns and plays on words—an important ingredient in their stage work.

Their latest project is a movie

with Keith Williams, a music video producer. They're slated to collaborate on a half-hour featurette for Walt Disney films. "Although it's not scripted yet," says Howard, "it will probably be a combination of our own cheap theatrics, juggling and Disney animation."

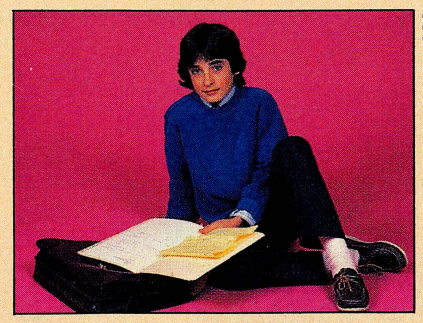
What else does the future have in store for them? They recently met with Steve Jobs of Apple Computers—one of their biggest fans—and discussed a possible association. If that works out, you may soon see Howard Patterson juggling a joystick, a modem and a Macintosh—all Apple products, of course. *—Ken Wilson*

MUSIC MICRO: "Hot-rockin', flame-throwin' **Z-100**" is not a name to be taken lightly. That's the title New Jersey pop radio station WHTZ goes under.

Now the station, one of the most popular in the New York City area, could add the term "number crunchin'" to its list. For the past year, Z-100's music director Mike Ellis has been choosing the station's musical playlist with guidance from an IBM PC and a *Lotus 1-2-3* software package.

Ellis polls 150 local record stores every Monday for disk sales, then adds in a week's worth of listener requests. The *Lotus* program lays out the rotation of records, giving the most popular tunes more airplay. No doubt the system helped bring Z-100 "from worst to first" when the station changed music formats a year ago.

Never ones to take the computer *too* seriously, Ellis and program director Scott Shannon say they still sometimes "ear pick" a song they think will be popular with listeners.



COURTESY OF CBS

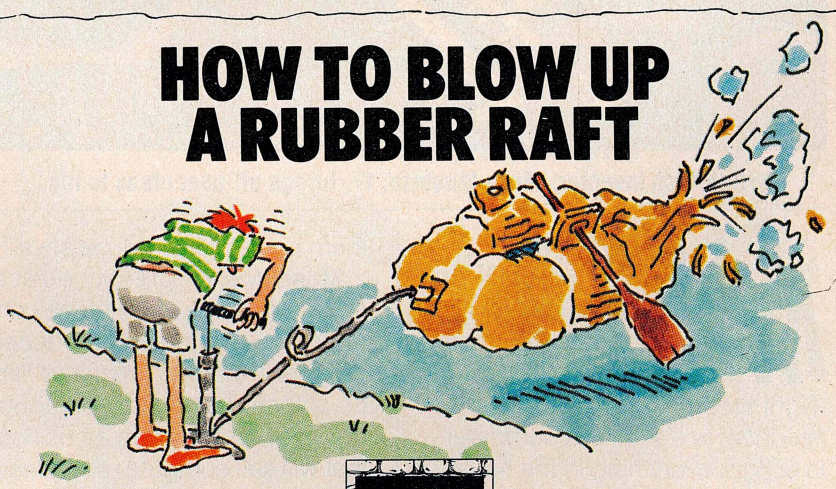
Soap star takes computer role home.

SOAP SCOOP: An orphan mysteriously arrives in town and moves in with a family he claims to know. They boy is bright, but quiet, and his favorite playmate is a computer. Buy why has he come to town? The characters in CBS-TV's ***Guiding Light*** soap opera soon find out. Jonathan Brooks, played by **Damion Scheller**, 14, thinks his computer has helped him to find his father—alive. And so the mystery begins.

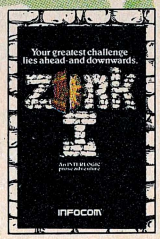
Not to be outdone by the role he plays, soap opera vet Damion is a computer fan, too. While the mystery unravels on TV, Damion's says he's planning to buy an Apple IIe, the model he uses in school.

'2010' AGAIN: **Genesis** keyboard player **Tony Banks** has been signed to compose a state-of-the-art electronic score for ***2010***, the sequel to ***2001: A Space Odyssey*** from MGM/UA due out this Christmas.

HOW TO BLOW UP A RUBBER RAFT



First, you need a reason to use a rubber raft. (That's a snap if you've got ZORK® I, the classic fantasy story from Infocom's interactive fiction line. Because you'll be hunting twenty fabulous treasures while dodging every kind of evil under the earth.)



Next, type in your command: BLOW UP THE RUBBER RAFT WITH THE AIR PUMP... But watch it, or you might just blow up the raft until you blow yourself to smithereens!

There's no telling what will happen next in ZORK I—because, like all of Infocom's interactive fiction, ZORK's designed so that whatever *you* choose to do makes the next thing happen. And you won't run out of things to do, either. The underground empire of ZORK is so huge, your adventure can last for weeks or even months.

So if you want the closest thing on a disk to really exploring an underground world, get ZORK I*. But brace yourself for the action—it'll blow you away!

INFOCOM™

*It's compatible with almost every popular home computer. ZORK is a registered trademark of Infocom, Inc.

PACESETTERS

EDITED BY ELIZABETH HETTICH

MICRO MOVIEMAKER

PHOTOS © STEPHEN ELLISON

High-tech inventor: Musa Mustafa, 17, brings off-beat ideas to life.

BY KEN WILSON

Musa Mustafa's newest project sounds like something a mad scientist might dream up. "My photocell interfacer will allow the computer to control everything in the house, from the coffeemaker to the outside sprinklers to my synthesizers," explains this 17-year-old Los Angeles whiz kid, sitting amid the electrical clutter of his bedroom.

Musa's new invention may sound a little wacky, but don't believe it. Atari, the computer and video game company, is behind him, providing funds and support. They think he really might just do it. "I like to come up with the wildest ideas and then try to make them come to life," Musa says.

Musa doesn't just try; he's actually made some of his ideas come to life. He's written and produced six award-winning animated films, co-authored a book on computer graphics, and started a business that will sell computer and electrical equipment he invents. With all this, he still finds time to serve on Atari's Youth Advisor Board.

Musa moved to the U.S. from Bangladesh with his mother, father and older brother, Zaki, when he was five years old. "I didn't speak even a word of English—but I was so young that I picked it up quickly." Even back then he liked to make things, "model cars, airplanes and stuff."

It wasn't until the eighth grade that Musa really put his creative talents to work—in an animation art class. After taking that class, "I was hooked," he says. "I loved to bring things to life on the screen."

The result of that class was *Cassigrain,* a super-8mm animated movie about space aliens who try to take over another planet. The clay models of the alien space craft and the planet they invade are among the objects in Musa's crowded room. Musa has made five more films since *Cassigrain.* Three of his films won awards from the National Film Association, while the others have won recognition from other organizations.

Expert Effects

"One of my movie-making specialties is computerized special effects," says Musa. These effects are created on a computer, then shot off the screen and incorporated directly into the film. Using his Atari and Yamaha synthesizers, Musa has also created computerized sound effects for his film *Omicron.*

Musa's introduction to computers came a year after he took his first animation class. "I was very interested in learning to use a computer. So I got a book and started teaching myself BASIC."

The next year, Musa signed up for an animation class at Rowland High School in Los Angeles. The class was taught by Dave Masters, a teacher who "was exploring the computer's potential for film animation," recalls Musa.

Dave's class heightened Musa's interest in computers. "I found

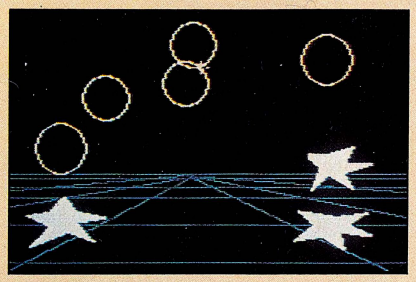
that computers allow even more freedom for animation than films do, because with computers you can control all the variables and create a completely imaginary world right on the screen," Musa says enthusiastically. "Someday I'd like to make a film done completely with computer animation."

Musa and Dave ended up writing two books together. "Dave noticed I was really into the technology of the computers, so he asked me to collaborate on a book he was writing," Musa recalls. Dave adds, "I thought Musa would be good to work with because he's one of those rare kids who's very good technically as well as artistically. He blends the two, which makes him really unique. He's a renaissance kid."

Their book, *Animate Your Atari* (Reston Creative Pastime Books), should be available soon. *Animate Your Apple* should be out around Christmas. Both books include programming that shows how to construct and animate 3-D images on the computer.

When Musa isn't making films, writing books or creating sound effects on his synthesizers, he's probably inventing. Last year, he and his brother Zaki invented a digitizing pen that hooks up to a computer and lets the user draw on any surface—a desktop, the floor, a sink—and the computer will display the picture. Unfortunately, says Musa, "a number of companies beat us to the marketplace with the idea. That taught me a valuable lesson. In the computer business, you've got to be ready to go into production. Otherwise, someone else will do it tomorrow."

Still, he and Zaki have plans for creating new products. In fact, they have just joined with their



A sample of Musa's animation.

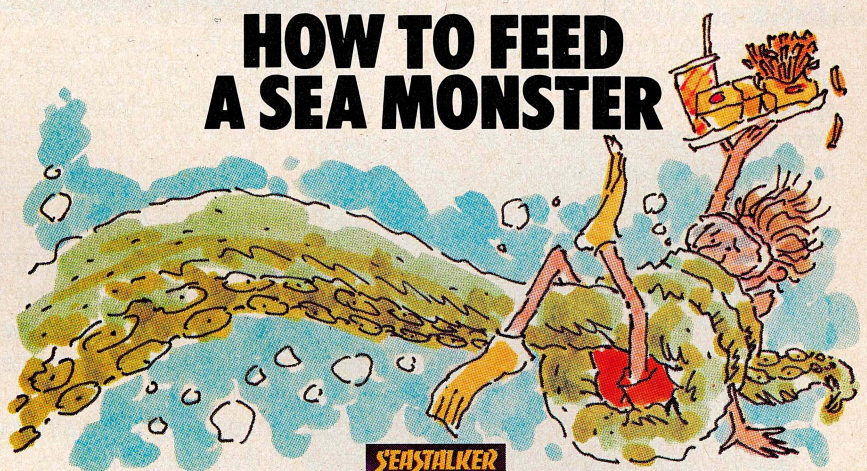
friend John Fragosa to form a company that will create, produce and sell electronic and computer-oriented products.

This fall, Musa is enrolled as a freshman in electrical engineering at California Polytechnic Institute in Pomona, California. But before he sets off to school, there's something he has to do. "I've got too many diskettes," he says, pointing to a large bookshelf overflowing with floppy disks. "Someday, I'm going to have to build a robot to make retrieving them easier." He'd better get to work on this project soon. At the rate he fills up floppy disks, soon there won't be enough space in Musa's room for Musa.

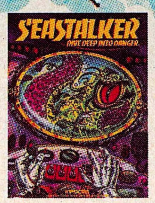
KEN WILSON is a freelance writer in Los Angeles.

Do you know a pacesetter? If so, send a short note, describing him or her, to: Pacesetters, ENTER, 1 Lincoln Plaza, N.Y., NY 10023. If we write up your story, you'll get an ENTER T-shirt.

HOW TO FEED A SEA MONSTER



First, locate a sea monster. (The best place to find one is in SEASTALKER,™ the brand-new undersea story from Infocom's interactive fiction line.)



Next, type in your command: GET OUT OF THE SUBMARINE AND FEED THE CATALYST CAPSULE TO THE MONSTER. Then, swim for your life! Because the trouble with feeding sea monsters is, the monster might decide to feed on you!

There's no telling what will happen next in SEASTALKER. Because, like all of Infocom's interactive fiction, SEASTALKER's designed so that what happens next depends on what *you* decide to do. And you'll be doing plenty, too—your voyage can last for weeks or even months.

So get the closest thing on a disk to going on a real-life sea adventure. Sink your teeth into SEASTALKER*. But when you do—watch out!—or you might just find out somebody has a sweet tooth for you!

INFOCOM™

*It's compatible with almost every popular home computer. SEASTALKER is a trademark of Infocom, Inc.

CONNECTIONS

EDITED BY SUSAN JARRELL

Kid Computer Conference

Is there life after joysticks? This question and others will be discussed at the "Bits & Bytes" conference, a gathering that bills itself as the first national computer conference aimed at kids.

"Bits and Bytes" will be held at Disneyland's Convention Center in Anaheim from November 30 to December 2. It will feature hands-on workshops and seminars (including a special "Whiz Kids" panel), and exhibits of the latest hardware and software aimed at teenagers.

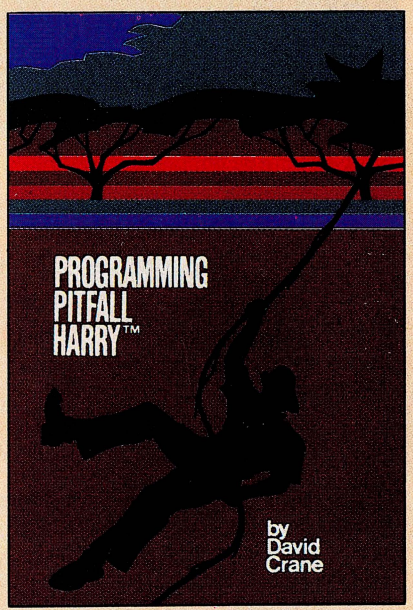
"This conference will be a barrier-free environment," says spokesperson Doug Mitchell. "You will be able to play with all the equipment and software."

Daily tickets are $3.50 per student and $7.50 per adult. For more information, call Roger Fisher (213) 478-0995.

Playing with Pitfall Harry

Have you ever dreamed of being able to *really* control a computer game? Well, if you own a Commodore 64, you're in luck. David Crane, creator of *Pitfall Harry*, has written a booklet that shows you how you can reprogram your *Pitfall* disk. Want to make Harry's hair blond, or make him move a lot faster? This four-page booklet from the Activision C-64 club gives you programming tips to do just that.

The booklet is free at computer



stores, or you can send 25¢ to The Activision C-64 Club, P.O. Box 7287, Mountain View, CA 94039.

Infocom Info

Infocom games are fun, but they can be frustrating, too. Now Infocom is offering help for baffled adventurers in the form of enhancement packages to help you through difficult sections.

The packages include hint booklets, game maps, and a special pen to decode the invisible ink in the booklets. They're available for all Infocom games, including the new *Seastalker*, for $7.95. To purchase one, ask at your local software supplier, or call 1-800-238-2200. In New Jersey, call 1-800-262-6868.

Finally, if you're still stumped, don't forget that Infocom has a techno-hotline, (617) 576-3190.

Free Spelling Checker

If you do word processing on a Radio Shack Color Computer, here's a free program offer worth checking out.

The Star-Kits Software Systems Corporation will send you a copy of *Spell 'n' Fix II* for the Color Computer if you send them a blank disk. *Spell 'n' Fix II*, which works with any word processing program, catches typing errors and spelling mistakes. The program contains over 20,000 frequently used words.

Spell 'n' Fix is offered at no charge. If you like it, the company asks that you pay them what you think it's worth. They also promise to give you $1 for every mistake *you* catch in their program.

For a copy of *Spell 'n' Fix II*, send a blank disk and a disk-sized, stamped self-addressed envelope to: Star-Kits Software Systems Corporation, P.O. Box 209, Mt. Kisco, NY 10549.

'Programmers' Contest

Attention, TRS-80 programmers! *80 Micro* Magazine's programming contest for kids under 18 is looking for you. The grand prize is $300. For more information, write Young Programmers' Contest, *80 Micro*, 80 Pine Street, Peterborough, NH 03458. The deadline is October 1, 1984.

To list news, resources or contests in this column, write to: "Connections," ENTER, 1 Lincoln Plaza, NY, NY 10023.

Help Agent U.S.A. stop the fuzz plague. And you can win a trip to Washington, D.C.

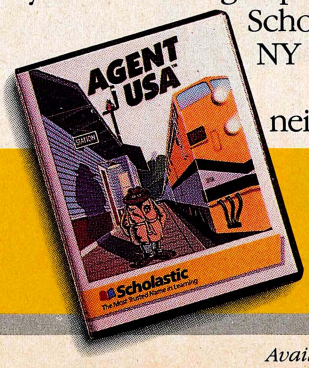
The FuzzBomb is turning millions of men, women and children into mindless fuzzbodies. And Agent U.S.A. can't stop the devious plague spreader without your help.

But don't accept the assignment unless you're really prepared to stretch your mind. Because sharp eyes and quick reflexes aren't enough to stop the fuzz plague. You'll have to outthink and outplan the FuzzBomb as you pursue him around the country in super-fast rocket trains. And you'll have to remember state capitals, learn the time zones and figure out the quickest routes across the nation. If you don't, the fuzzbodies will turn you into one of them.

Become one of the few super-agents to defeat the FuzzBomb and you may win a trip to intelligence headquarters in Washington, D.C. What's more, even if you never catch the evil one, tell us what you like about the game and you can become an instant winner of an Agent U.S.A. knapsack (see package for contest details).

Agent U.S.A. needs you now. So sign up where you usually buy your software. Or write to Scholastic Inc., Dept. EW, 730 Broadway, New York, NY 10003.

Do it before the fuzz plague comes to your neighborhood!



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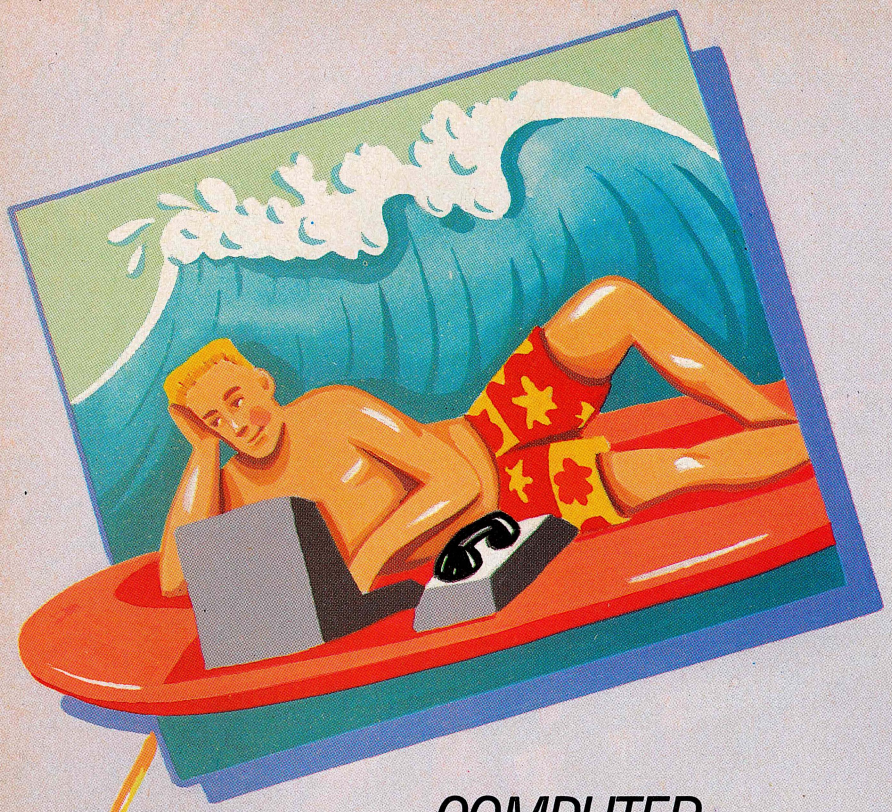
Available for Apple, Atari, Commodore and IBM.



LIFE

COMPUTER NETWORKING PLUGS YOU INTO THE WORLD

One night, a bunch of rock-and-roll fans began "singing" on our computer.

"I met him on a Sunday, and my heart stood still," began the first singer. Someone else chimed in "Da doo ron ron ron, da do ron ron." Those who couldn't remember the words simply "strummed" their banjos.

Wait a second! All this was happening *on our computer?*

That's right, on our computer—a computer plugged into the world of electronic bulletin boards.

Using a modem, my daughters Sadie, 13, and Miranda, 10, and I can connect with people across the nation without ever leaving the glowing green square foot of space in front of our computer. The modem *MO*dulates and *DEMO*dulates a computer's digital signals so different computers can "talk" to each other over phone lines.

Today, computer-users everywhere are reaching out to create a nationwide on-line network filled with intense friendships, digital

ON-LINE

BY LINDSY VAN GELDER

dating, wild keyboard parties and, yes, even rock-and-roll singing.

SYSOPS & EBBs

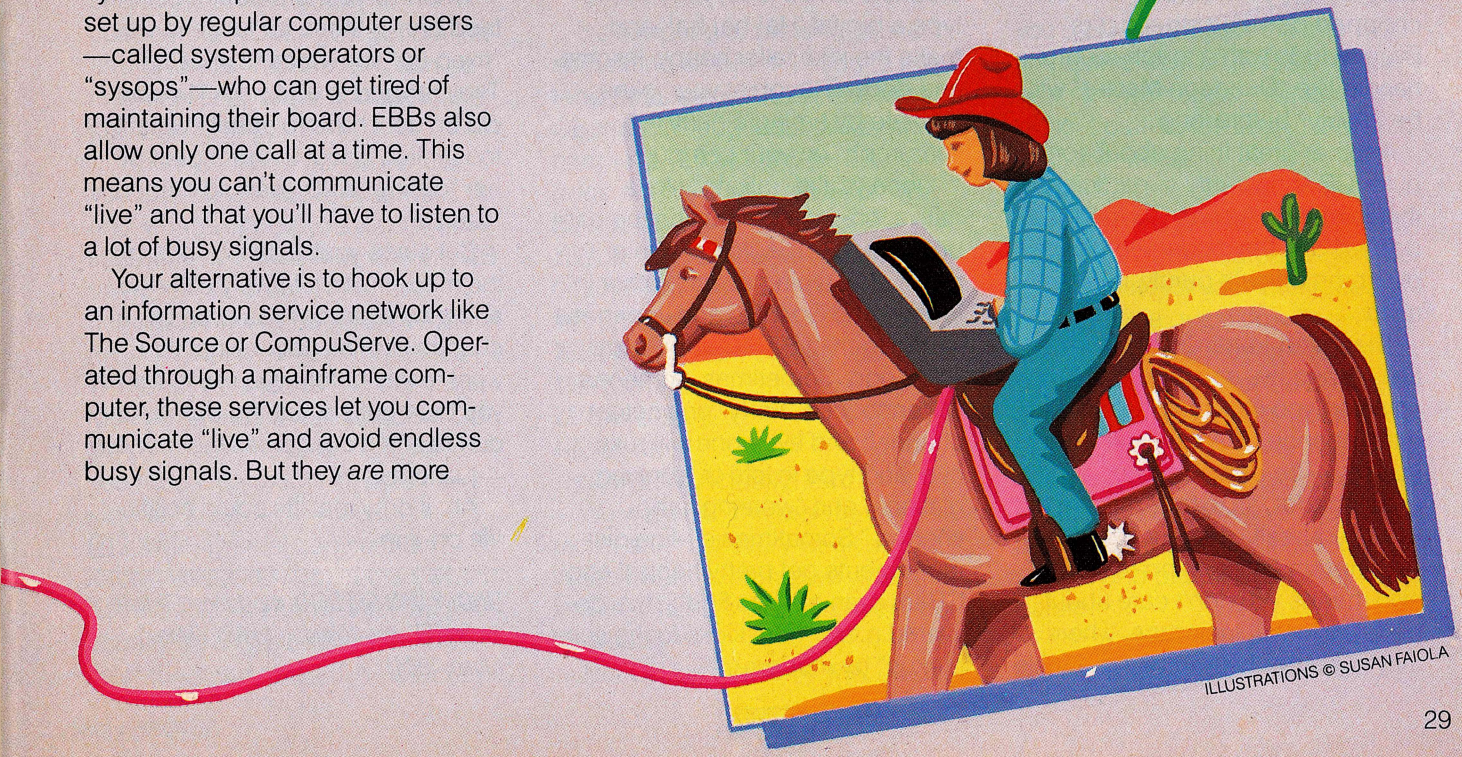
There are two main ways to communicate via modem: through privately-operated Electronic Bulletin Boards (EBBs) or on a major on-line computer service like CompuServe or The Source.

EBBs tend to be informal and relatively inexpensive, but they seem to have the lifespan of a fruit fly. About 90 percent of all EBBs are set up by regular computer users —called system operators or "sysops"—who can get tired of maintaining their board. EBBs also allow only one call at a time. This means you can't communicate "live" and that you'll have to listen to a lot of busy signals.

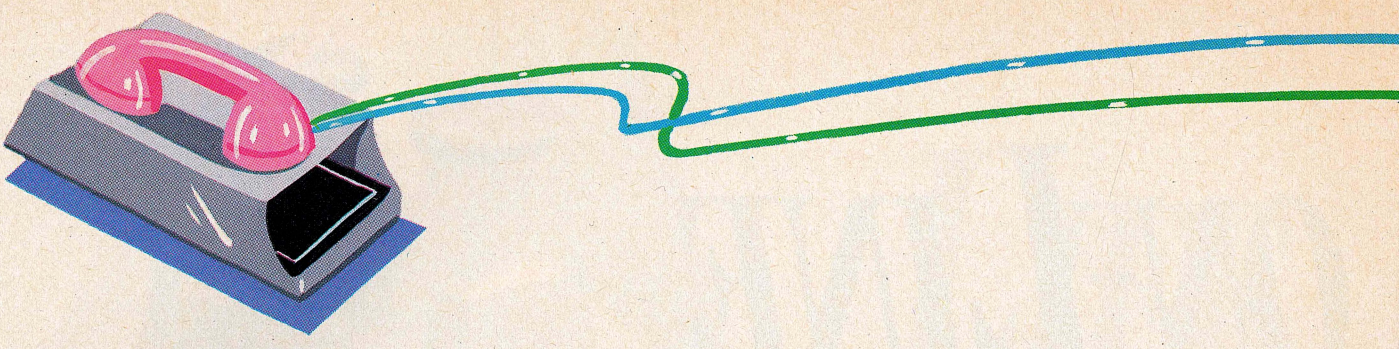
Your alternative is to hook up to an information service network like The Source or CompuServe. Operated through a mainframe computer, these services let you communicate "live" and avoid endless busy signals. But they *are* more expensive. You may need an iron will—or an hysterical parent yanking the plug out of your computer—to keep the bills down.

CHANNEL CHATTER

The on-line networks offer many services, including Special Interest Groups (SIGs) devoted to topics like programming, music, golf, and outer space. But for Sadie, Miranda and me, our favorite on-line service is CompuServe's "CB Simulator"—an on-line "citizens band radio"—



ILLUSTRATIONS © SUSAN FAIOLA



LIFE ON-LINE

that lets people from all over the country "talk" to each other through their computers. Computer CB is another world, with traditions all its own.

One of the finest traditions is the CB "handle"—the name you call yourself when you log on and talk with other computer users. People tend to be very creative when choosing a CB name. A handle can be personal—lots of people name themselves after their home state, hobby or movie character. Or a handle can be silly. We've run across CBers with handles like "Conan the Librarian," "World Class Moose," and "Demented in Doodah." When selecting a handle, keep it short. Unless your handle is easy to use, you can bet it will be chopped down by other users. Even a dude with a rough-tough handle like "Dungeon Master" will be "Dunjy" before long.

Another great thing about computer CB is how *little* superficial things matter. As one CB friend pointed out, the modem lets people communicate purely, mind to mind.

That mind-to-mind communication means you can become almost anything you can imagine. It's a great chance to try out a new personality—be a punk rocker, a space cadet, an extraterrestrial or even...yourself. It's your choice.

Communicating mind to mind also means you don't care about people's looks, their race, where they're from, whether they're a male or female, or whether they're able-bodied or sitting at their computers in a wheelchair. The categories we usually use to judge each other by become unimportant. By the time people get around to asking about these things, they've already become electronic friends.

TELL IT LIKE IT IS

"Talking" over the computer is *not* like talking with someone in the same room. It is, for instance, very different to express emotions on-line. In person, we express ourselves with our voices, body language and facial expressions. But you can't see a smile through a computer screen. So, if someone cracks a terrific joke, you have to type a big fat 'Ha! ha! ha!' and make the joke teller happy. If someone doesn't laugh at *your* jokes, retaliate by typing a huffy "harumph" on your computer.

Once you're "talking" like a native, on-line communicating can be downright magical. People might start typing at each other in French and Spanish and Japanese —and then in BASIC and Pascal and Logo. Sometimes, someone will announce "Party" on another channel, and everyone will rush over and type in lots of "clinking glasses" and "wearing lampshades." Sometimes on-line disagreements get pretty heated and CBers even get into fights. I've delivered a few "front kicks to the solar plexus" by modem.

But mostly CB is calm. There's something about sitting at your computer and typing to a stranger on the other side of the country. It tickles your funnybone and thrills you. It makes you feel surprisingly close to complete strangers. Shy people bloom, and not-so-shy people share feelings in a new way.

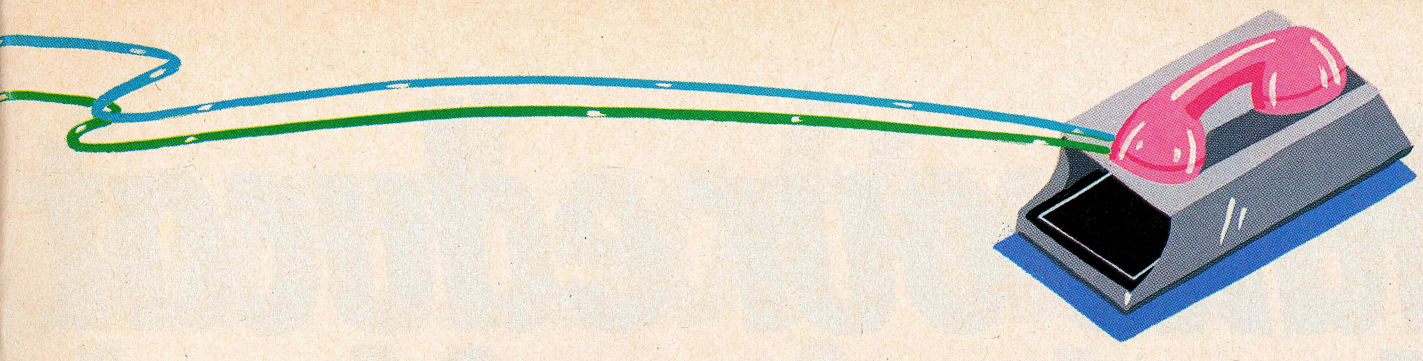
Several people have even met their husbands and wives on-line. And if you're not ready for marriage, it's easy to "date" on-line. On-line dating services like "Dial Your Match" and "Mark the Martian's Mixed-Up Matching and Message Machine" ask you to fill out a questionnaire about your hobbies and personality. You then receive a list of compatible potential dates.

When 13-year-old Sadie recently tried one of these for fun, she was "fixed up" with dozens of dates. They ranged in age from 11 years old on up. I have to admit I wasn't too thrilled about the prospect of her "dating" a 40-year-old named "Banzai."

But since you're dating through the modem, it's relatively risk-free... and pressure free. You even get a chance to think about what you want to say before you say it. And if you blurt out something dumb, don't send it out across the modem —just erase it.

Ah, if only real life could be like life on-line.

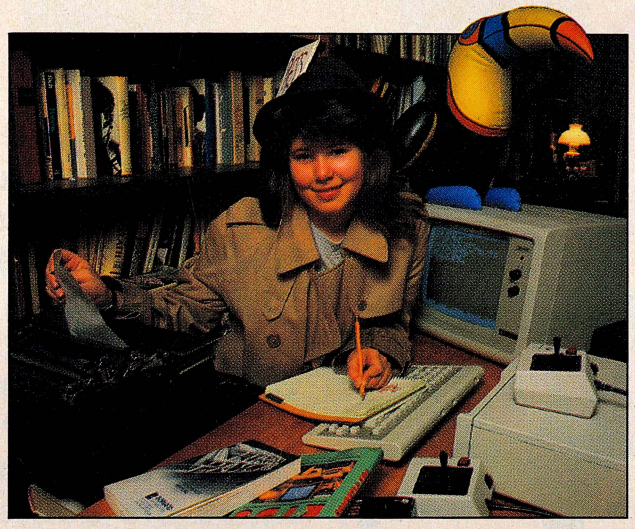
LINDSY VAN GELDER's most recent article for ENTER was "Making Music Videos" (June, 1984).



THEY CALL ME TOUCAN

ENTER's Roving Reporter Explores Computer CB

BY SADIE VAN GELDER, 13



At first, I was pretty skeptical about computer "CB." Most people I'd tell about it would say, "Why don't you just use the telephone?" But computer CB is different. It's neat to know that I'm "talking" to people across the country through my computer.

My handle is Toucan—you know, like the tropical bird in the Froot Loops™ commercial? Once you get on-line and give your handle, you can go to whatever channel you want and just start typing.

When you're on computer CB, you can be whomever you want *and* whatever age you want. For instance, while I was interviewing CB users for this story, I changed my handle to Roving Reporter. While roving, I met a 24-year-old called The Coz. I started telling him I was looking for kids to talk to about CB experiences. He said: "Oh, have you tried Channel 17? That's the kids' channel."

Suddenly I realized he didn't know I was a kid. I snickered when he added: "You know, the kids are usually on a little earlier." I didn't have the heart to tell him I was 13.

It's tempting to pretend you're something different. I used to pretend I was older. Then I met my first CB friend, Doug Moskowitz, whose handle is Yellow Lion. As it happens, we were both pretending to be adults:

YELLOW LION: So...what is your occupation?
ME: Student.
YELLOW LION: How old are you?
ME: You first.
YELLOW LION: 12.
ME: So am I!
YELLOW LION: Actually, I'm 11.

We went into the private-talk mode and met every week on CB. When I went to camp, we wrote letters. (Sure it's old-fashioned, but so what?)

But CB isn't the only way I use my on-line hook-up. There's also an electronic encyclopedia on CompuServe that's good for school assignments. Once you get into the electronic encyclopedia (by typing GO AAE), it asks you for a search term. You type in a subject, like atoms, and it finds as many articles about that subject as it can.

This is especially good if you have a printer. Then you can just print out the information. Some kids in my class actually bring the printout to their teacher without putting the information into their own words.

There are other great on-line services, like games. You can play adventure games, arcade games, games that test your intelligence, ask you trivia questions, or even let you do MAD LIBS by computer!

But the best part of life on-line is knowing you're actually hooked into a big computer network. You're speaking with friends you've never seen, playing games you had never heard about, and finding out about people and places you never knew before.

SADIE VAN GELDER lives in New York City.

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America's schools need your help!

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The Scarborough System has a complete range of programs to stimulate, challenge and help you or your children be more productive—including Your Personal Net Worth, that makes handling home finances fast and easy, Make Millions, an adult business simulation game, and PictureWriter,* a program that makes drawing on the computer fun. At your dealer's now.

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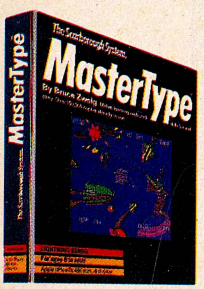
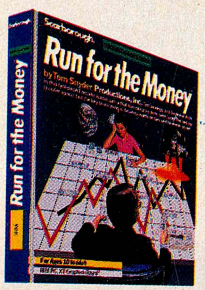
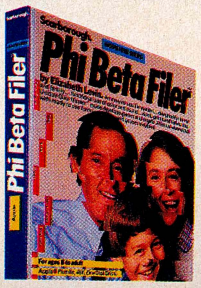


MasterType™* Sharpen typing skills and increase computer facility. MasterType is the nation's best-selling educational program. It's an entertaining game that teaches typing as it increases the keyboard skills needed to be at home with a computer. And there's a bonus on top of this bonus: when we send a copy to your local school, at your request, your child will become even more proficient with a computer.



Run for the Money™ Learn to pursue profits in the real world by escaping from an alien planet. Here's an excitingly different, action-packed game of business strategy for two players. Your children will have fun as they learn a lot about business.

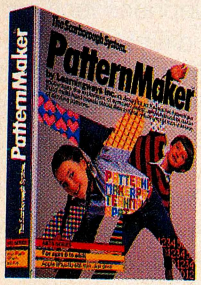


Phi Beta Filer™* New for children and adults. Organizes lists of addresses, dates, insurance and medical records, hobbies and collections—even school work—structures quizzes on any subject, quickly and easily. (Not available for Atari.)

Songwriter™* Kids and adults will love making music at the computer. Just press a key to listen, press a key to record, and you've started your own composition. It's a fun way to learn about music. And Songwriter can be played through your stereo or computer.

*National Education Association Teacher Certified Software.

MasterType
Phi Beta Filer
BOOK-OF-THE-MONTH CLUB GUIDE BEST COMPUTER BOOKS & SOFTWARE



PatternMaker.™ An amazing software program. It's geometry. It's art. It's great fun. Kids can build dazzling patterns and learn a lot. PatternMaker builds a foundation that can be applied to many professions and crafts. It challenges creativity and effectively teaches symmetry, color and design, and it's just as much fun for grown-ups, too.

Our programs are available for: IBM-PC/ PCjr, Apple II family, Commodore 64, Atari.

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Yes! I want to software a school!

**Enclosed is the completed warranty card and sales receipt for the purchase of a Scarborough product. I am enclosing my check for $3.50 to cover handling, shipping and postage required to send a free copy of a Scarborough program to the school listed below. A gift card with my name will be enclosed.

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Your Name (for gift card)_____

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Software will be sent only to verifiable school addresses.

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PLUGGING IN

EVERYTHING YOU NEED TO KNOW TO GO ON-LINE

BY FRED GEBHART

Life on-line can be exciting, but *getting* on-line can be confusing. Here's a hands-on guide to get you started using your computer to play games, get information, and even make friends.

GETTING STARTED

You need four things to go on-line: a computer, a phone line, a modem and communications software.

1. Computer: Any computer will do, as long as it has a keyboard and monitor or TV screen.

2. Telephone: A rotary dial or push-button phone is fine. Remember, nobody else will be able to use the phone while you're on-line.

3. Modem: That's short for *MO*dulator-*DEM*odulator. Modems can cost between $50 and several hundred dollars. The modem, which connects your computer and your telephone, converts *(modulates)* computer signals to sounds that can be sent over the phone line. It then changes the sounds from the phone back to computer signals *(demodulates).*

Here's how it works. Information runs through your computer in groups of eight bits, like cars roaring down a freeway eight abreast. But a telephone line is a one-lane road that can only handle one bit at a time. The modem acts like a funnel. It squeezes a row of eight *parallel* bits into a *serial* line of eight bits, one behind the other.

The speed at which data is sent over the phone line is measured in bits per second, called *baud*. The most common is a 300-baud modem, which transmits data at about 300 words per minute. This is fine for most users. However, if you plan to do a lot of on-line communicating, you might want to invest in a 1200-baud modem. It is faster, but more expensive.

Once you've decided on baud rate, you'll still have to select the *type* of modem you want. There are three types: acoustic, direct connect and internal.

ACOUSTIC MODEMS have two cups where you place the mouth and earpiece of a telephone. Your computer sends information by "talking" into the mouthpiece, and receives by "listening" at the earpiece. Acoustic modems are the cheapest and the slowest. They may not work well in a noisy room.

DIRECT CONNECT MODEMS don't use a telephone receiver. They connect directly into the phone line with a telephone jack. This modem is more expensive and more reliable than an acoustic modem.

INTERNAL MODEMS are mounted in an expansion slot inside your computer. They are convenient, but can only be used with a few computers.

Acoustic or direct connect modems can be used with almost any computer. Plug your modem into the computer's communications *port*. Most computers have something called an RS-232 port, but brands like Apple and Commodore have special ports. With

© CHRIS MOORE

these computers, you can use special modems or buy adaptors to convert to RS-232 ports.

4. Software: Communications software tells your computer how to use the modem. This software starts about at $5, and goes up to about $400. The more expensive software usually has features that make it easier to use your modem.

Autodial, for instance, is a useful feature that lets the computer do the dialing instead of you. More expensive programs enter your password and ID number. There are also programs that can answer automatically when another computer calls.

Communications software usually works only with a specific combination of modem and computer. You won't be able to lend your on-line tools to a friend unless you have identical systems.

GETTING CONNECTED

Once you have the right equipment, you're ready to get on-line. The simplest and least expensive way is through Electronic Bulletin Boards (EBB). An EBB is a computer programmed to swap message with other computers.

There are thousands of EBBs across the country. You can use them to get answers to your computer questions, buy and sell equipment, copy public programs, and lots more. *The Computer Phone Book*, published by New American Library, is one good source for EBB numbers.

Then there are subscription services. These services are so complex that only a huge mainframe computer can handle the load. They cost money to use, but offer more than an EBB. A subscription service lets you use your computer to go shopping, go to the bank, buy an airline ticket, read a movie review, and more.

The two most popular on-line subscription services are CompuServe and The Source. These services offer subscribers dozens of separate bulletin boards for personal messages. A number of services let you play action and adventure games through your modem. You can read the news almost as soon as it's reported. You can even access an on-line encyclopedia.

Both services also offer "live" communication. CompuServe calls it CB Simulator, The Source calls it Chat. Both let you use

BORDER ILLUSTRATION © SUSAN FAIOLA

your computer the way truck drivers talk on citizens' band radio.

THE COST

Most popular subscription services cost between $6 and $15 for each hour you are on-line. Some very specialized data bases charge as much as $100 a minute. Whatever the charge, the time adds up very quickly to a lot of money. When you first get on-line, decide how much you want to spend in a month or a week. Then keep track of connect time, so you don't go over budget.

You also have to pay the phone bill for on-line conversations. If your favorite service is located on the other side of the country, you might spend more for the call than for the connect time.

Many subscription services have solved this problem by including phone service in their charges. This phone service is provided by private communications companies. They let you dial a local number, then hook you up with their mainframe.

So how much will it all cost? You can get on-line for less than $100 with a 300-baud acoustic modem, a public domain (free) program, and a discounted subscription to the service of your choice. Or, you can spend up to $1,200. But no matter how much or little you spend, your life is about to change.

Welcome to life on-line.

FRED GEBHART is a freelance writer in California.

SUBSCRIPTION SERVICES

Here are five of the many database services available by subscription. All charges are included on monthly bills.

BRS/AFTER DARK, 1200 Route 7, Latham, NY 12110 (800) 833-4707. NY state residents: outside 518 area code, call (800) 553-5566; otherwise call (518) 783-1161.
To Join: $75 one-time fee includes password, user ID, manuals.
Cost: $6 to $20 per hour, depending on data base used, and time of call. Minimum charge: $12/month.
Services: More than 20 specialized data bases. Electronic mail, bulletin board, swap shop.

COMPUSERVE, 5000 Arlington Center Blvd., P.O. Box 20212, Columbus, OH 43220 (800) 848-8199; Ohio residents (614) 457-0802.
To Join: $39.95 kit from computer stores, includes password, ID, manual, 5 hours connect time.
Cost: $6 per hour, 300 baud; $12.50 per hour, 1200 baud; $15 per hour prime time, 1200 baud.
Services: General information and reference, games, wire service news reports, specialized data bases, shopping, electronic mail, bulletin boards, CB Simulator.

GAMELINE, Control Video Corporation, 8620 Westwood Center Dr., Vienna, VA 22180 (703) 448-8700.
To Join: Fee, plus equipment module rental.
Cost: *To be announced.*
Services: About 30 video games, which change monthly. Games are downloaded to user's cartridge through special rented equipment, then played on Atari 2600 or compatible game players. A separate service is also being planned to provide on-line software to Commodore 64 and Apple II machines. NOTE: This service should be available nationwide in early 1985.

GAMEMASTER, 1723 Howard St., Suite 106, Evanston, IL 60202 (312) 328-9009.
To Join: $50 fee includes 10 hours of system time and full documentation; $20 introductory offer includes 4 hours of system time and partial documentation.
Cost: $3 per hour; 300 baud.
Services: Adventure games, interactive board games, sports games, bulletin board and chat function, information about Chicago-area events and services.

THE SOURCE, 1616 Anderson Road, McLean VA 22101 (800) 336-3366; Virginia residents (703) 572-2070.
To Join: $100 fee, includes ID, password and manuals. Some discounts available.
Cost: $7.75 per hour, 300 baud; $10.75 per hour, 1200 baud; $20.75 per hour, prime time, 300 baud; $25.75 per hour, prime time, 1200 baud.
Services: General information and reference, shopping, games (no animation), electronic mail, bulletin boards, CHAT.

MODEM MENU: An ENTER Guide

The prices listed below are only guidelines. You should be able to find discounts of 20–30% or more by shopping around. Most manufacturers make several models with different features and prices.

Software is almost always extra. Public domain programs like MODEM7.COM cost less than $10 from user groups. Commercial programs sell from $65 to more than $1,000.

NAME/COMPANY	SYSTEMS	PRICE	TRANSMISSION RATE
ATARI 1030 Atari	ATARI	$130	300 baud
AUTOMODEM Commodore	COMMODORE, VIC-20	$99.95	300 baud
C1600 VICMODEM Commodore	COMMODORE, VIC-20	$59.95	300 baud
DIRECT-CONNECT MODEM I Radio Shack	TRS-80	$99.95	300 baud
HESMODEM 1 Hesware	MANY HOME COMPUTERS*	$74.95	300 baud
J-CAT Novation	MANY HOME COMPUTERS*	$149	300 baud
MARK I Anchor	MANY HOME COMPUTERS*	$99	300 baud
MICROMODEM 11 Hayes	APPLE IIe, II Plus	$409**	300 baud
MPP 1000C MICROBITS Peripheral Products	ATARI	$150	300 baud
PASSWORD 300 U.S. Robotics	MANY HOME COMPUTERS*	$199	300 baud
SMARTMODEM 300 Hayes	MANY HOME COMPUTERS*	$289	300 baud
SMARTMODEM 1200 Hayes	MANY HOME COMPUTERS*	$699	1200 baud
TRANSEND I Transend/SSM	APPLE II COMPUTERS	$89	300 baud
VOLKSMODEM Anchor Automation	MANY HOME COMPUTERS*	$79	300 baud

*RS-232 compatibles. Your computer may need an adapter to use this modem. Check your owner's manual.

**Software included in price.

I WAS A TEENAGE SYSOP

A Talk with EBB Operator Andrew Silber, 12

Local bulletin boards are gaining in popularity, but an EBB can't run itself. Behind every board is a hard-working SYSOP, or systems operator.

To find out what it takes to become a SYSOP, ENTER talked with 12-year-old Andrew Silber of Santa Monica, California. Andrew brought his EBB, MegaNet #1, on-line in August, 1983.

"It's fun," Andrew explains, "and you learn a lot. With MegaNet, I can talk to people from all over and exchange information."

MegaNet has about 250 regular users. Andrew runs the network with an IBM PC equipped with a 10-megabyte hard disk. But, he points out, most networks are controlled by floppy disk systems. "Good software usually is the most important part of any EBB."

You can write your own programs, but Andrew suggests an easier way to get started. "Find a network you like and leave the SYSOP a message. Tell him or her you like the system and want to start your own. Most operators are glad to share their programs."

Andrew warns: "The frustration of getting no calls the first few weeks is the worst part. You have to advertise." The best way, he suggests, is to call other networks and post your own phone number.

How much does it cost to run an EBB? Once you have all the hardware (computer, auto-answer modem, telephone, etc.), Andrew says, "All it takes is electricity and an occasional phone call." You might even be able to make money running a bulletin board. MegaNet is free, but Andrew is writing communications software that he hopes he can sell.

"If you have something worth selling," he adds, "you can make money right away." EBBs with features like direct user-to-user chat (similar to CompuServe's CB simulator) and permanent message bases charge $20 to $60 a year for access.

But starting an EBB has other rewards, too. "You meet loads of people," says Andrew. "It's also good for the programming experience. People are always uploading, so you get free software to work with. Mostly, though, it's just a lot of fun."

Andrew welcomes new MegaNet users at 213-395-0460.—*Fred Gebhart*

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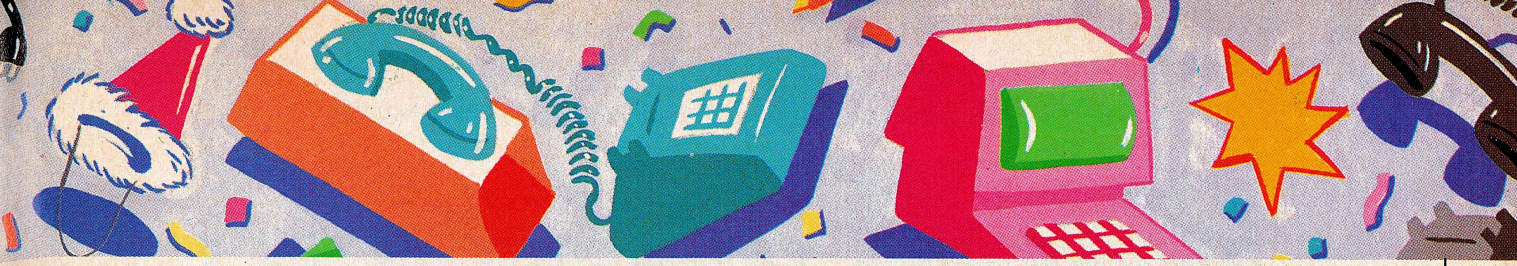


ON-LINE DEFINITIONS

You may think you've learned all the computer lingo you'll ever need. But when you get a modem, you'll find yourself learning a whole new computer language. To give you a little help, here are definitions of some common telecommunications terms.

ACOUSTIC MODEM—Modems work in one of two ways. *Acoustic modems* translate computers' electronic signals into sound. This type of modem has a cradle into which you place a telephone handset. The modem "talks" into the telephone when transmitting, and "listens" when receiving. *Direct-connect* modems plug into the phone jack. They translate computer code *directly* into electronic telephone signals.

ASCII—Stands for the *A*merican *S*tandard *C*ode for *I*nformation *I*nterchange. This is the most common code for representing information in binary form in home computers. It was adopted to make transfer of data easier from one computer to another. Each ASCII character is seven bits long. (For example, the letter "A" in ASCII code is 1000001.)

ASYNCHRONOUS TRANSMISSION—A common method of communication between computers. In an asynchronous mode, the transmitting computer sends a signal when it starts and another when it stops transmitting data. Also referred to as start/stop.

BAUD—The number of bits transmitted per second. Low-cost modems transmit at 300 baud; more expensive ones can send information at 1200 baud.

BUFFER—A device or an area in a computer's memory for temporary storage of incoming or outgoing data. Buffers are often used when two computers are communicating at different speeds.

CHARACTER LENGTH—The number of bits in each byte or character (a letter or number). ASCII (see above) is a system that uses 7-bit characters. Other computer codes use characters that are 8 bits long.

Each bit is either on or off, and can be written as a 0 or 1 in binary numbers. So a byte or character can be represented as a string of 7 zeros and/or ones.

DOWNLOAD—The process of receiving and storing files (or data) from another computer. Some games services let you download a game from their mainframe into your computer.

FULL-DUPLEX—A mode of communication in which data can travel in both directions along a telephone line at the same time. Half-duplex transmissions only travel in one direction at a time.

HANDSHAKE—A signal sent by two computers to establish communication. When you log onto The Source or CompuServe, your computer goes through a handshake process with their mainframe.

MESSAGE FILE—Most EBBs set aside an area where users can enter or read messages from other users. This file is stored on disk or placed in the computer's memory. (ENTER uses the message file on CompuServe and The Source to get notes from our readers. See "Feedback.")

PARITY—A method of checking for mistakes in transmitted data. A parity bit is an extra bit added on to every byte. The parity bits are then checked at the receiving end to see if any data was lost.

PROTOCOL—The procedures two computers follow in order to communicate. Protocol can include baud rate, full-or half-duplex, and other procedures.

RS-232 PORT—The standard connector on home computers that a modem plugs into. The RS-232 is a serial port, one that can send or receive information in only one direction at a time. Although most home computers have an RS-232 port and they all send data in basically the same manner, they *can't* all use the same modem.—*Richard Chevat*

MARTINA'S HIGH-TECH TRAINER

A COMPUTER PROGRAM HELPS THE TENNIS CHAMP IMPROVE HER GAME

BY WAYNE KALYN

Sometimes even legends need a little help.

For years, Martina Navratilova has been called the greatest player in women's tennis. But year after year, Martina had been unable to clinch the one title that meant the most to her—Champion of the U.S. Open, Women's Division.

All that changed last September at the Open in Flushing Meadows, New York. Martina beat arch-rival Chris Evert Lloyd in straight sets to win her first U.S. Open championship.

Since then, Martina has been almost unstoppable. Over the past year, she has captured the Wimbledon, French and Australian Open titles to become one of the few players ever to win the so-called "Grand Slam of Tennis." And according to other players on the circuit, Martina is stronger than ever. Over her last 86 matches, Martina has lost only one!

The 27-year-old champ says her new success has as much to do with her activities *off* the court as on. Martina's health and her game-playing strategy have been improved with help from a nutritionist, coaches and friends. Oh yes, there was one other helper: a computer program especially designed to help the tennis star to monitor her progress and prepare her for opponents. The program's name? *Smartina*, of course.

Martina and her trainers use *Smartina* to monitor every morsel of food she eats. The program keeps track of anything else that might affect Martina's playing condition.

"The computer has made sure that I get better physically every day—in terms of training and fueling my muscles," explains Martina. "After several weeks of working with *Smartina*. I felt myself becoming stronger, getting quicker, and having more energy reserves on and off the court."

Smartina was designed by Martina's coaches, nutritionist Dr. Robert Haas and a computer programmer. It charts two important indicators of an athlete's physical condition—the chemical content of the blood and the amount of oxygen in the muscles. By providing this information, *Smartina* helped Martina increase her strength and improve her training habits. Of course, Martina had to do the work—changing her exercise and eating habits.

© ADAM J. STOLTMAN/DUOMO

What would prompt an already very talented tennis player to put herself through such an experiment? "The fact that I was losing matches I knew I had no business losing," Martina explains. "The final blow was the U.S. Open in 1982. I had had a great year and I felt this was it. I was going to win the Open. [But] it didn't come close to working out that way."

LEARNING FROM A LOSS

In that Open, Martina faced Pam Shriver in the quarterfinals. Pam is a good player, but Martina had beaten her frequently in singles

Can a computer help Martina win the U.S. Open the way she won at Wimbledon?

matches. Yet on this steamy, humid morning, a stunned crowd saw Martina lose to Shriver.

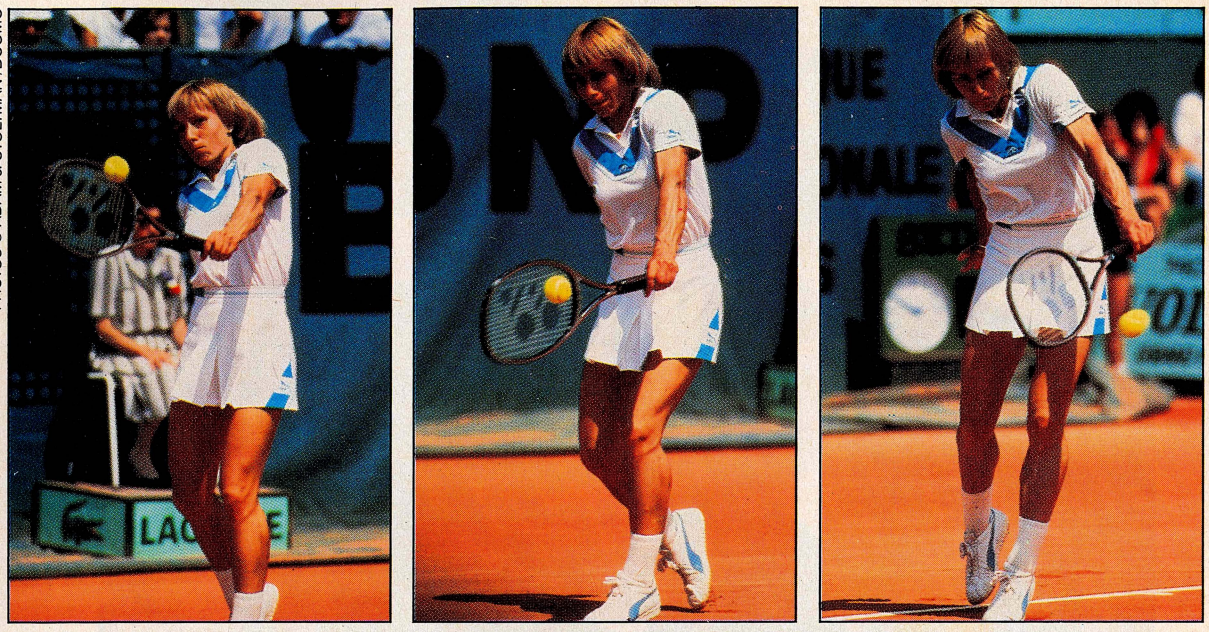
Feeling weak and looking as pale as a ghost, Navratilova went to a doctor immediately after the match. The doctor's diagnosis was that Martina had toxoplasmosis, a form of food poisoning. Martina learned a lesson from the incident, and made a big decision.

"I wanted to get better...I didn't want to lose like this again," she recalls. "If that meant tearing myself down and building back up, I was ready to do it."

Through a fellow tennis player, Martina heard about the work of Dr. Robert Haas, nutritionist and author of the best-selling book, *Eat To Win.*

"We talked it over and Martina agreed to be charted and scanned by computer," says Haas. "She ate and trained according to its recommendations. Within months, she had new reserves of energy. She lost weight, gained muscles and, as a result, became even faster on the court. All this gave her a mountain of confidence she didn't have before."

Martina's transformation didn't



PHOTOS © ADAM J. STOLTMAN/DUOMO

On the tennis court, Martina is more competitive than ever with help from a special computer program.

happen overnight. First, the computer analyzed the results of her blood test. The *Smartina* program can analyze 39 different aspects of the blood, including cholesterol and sugar levels, body-core temperature, and other vital measurements which might affect athletic performance. Every month Martina would send another blood sample and the computer would tell her the progress she had made.

To help Martina make progress, Dr. Haas recommended an eating plan that replaced her favorite foods, like cheesecake, butter, and meats with foods like pasta, grains, and legumes. The computer charted her road to fitness. As Martina stopped eating fatty foods, which tend to fill the bloodstream with unnecessary and potentially harmful deposits, her blood was getting "cleaner."

"The way I understand it," explains Navratilova, "young children have excellent blood values. As they grow into adults, their biochemistry changes for the worse because of what they eat. Right now, after one and a half years on the computerized diet, I almost have the blood of a newborn baby. I've never been fitter."

The *Smartina* plan also called for special vitamins and supplements designed to sharpen and speed up communication between mind and muscles. Thus, Martina's reflexes on the court became devastatingly quicker.

Each month, as she travelled around the world from one event to the other, Martina would receive "*Smartina* Reports." These computer printouts told the tale of her health, as well as what, and how much, she should eat.

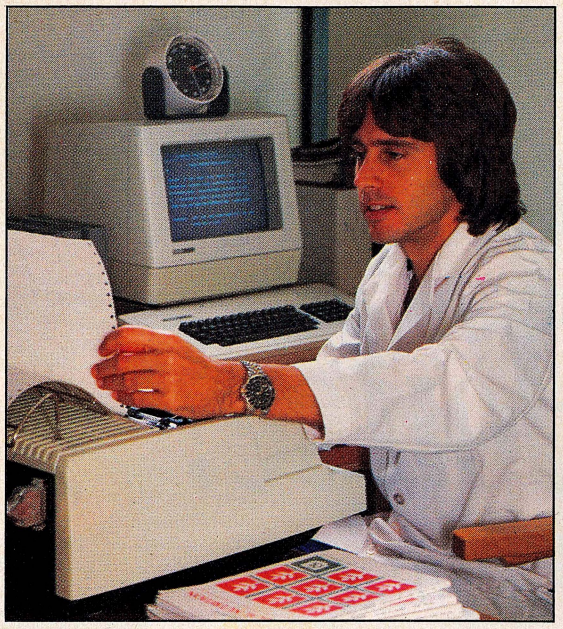
Today Martina can sometimes be seen courtside, munching away between sets. While most players only sip water or Gatorade, Martina eats from a picnic basket she carries onto the court. "It's funny," she says. "I might be sitting here removing Saran Wrap from a bagel or an energy bar and everyone's thinking, 'How can she be eating at a time like this?' The food is really a great pick-me-up."

Of course, Martina splurges once in a while. On special occasions—after winning a big tournament, for example—she eats behind the computer's back. Her favorite cheat is Peking duck or home-cooked Czechoslovakian food.

TRAINING BY MICROCHIP

Martina has also learned how to work her muscles in new ways. The computer program assists in this training by measuring the oxygen consumed by her muscles and gauging her body-core temperature. The program then recommends an aerobic or anaerobic workout, as required.

Here's a typical Navratilova workout: A half-mile run just to warm up, followed by 30 sit-ups on a slant board. She then does a series of muscle-exhausting exercises on a Nautilus machine, and goes on to the Exercycle, where she works out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Dr. Robert Haas prepares a "Smartina Report" . . .

WEEKLY DIET CHEMISTRY REPORT FOR:
MARTINA NAVRATILOVA: 1/03/83
FOR HER EYES ONLY

CAUTION: SMARTINA is a copyrighted and confidential computer program created especially for Martina Navratilova. Unauthorized use of this program and/or the information contained herein is strictly forbidden and unlawful.

CURRENT DIET CHEMISTRY RECOMMENDATIONS FOR WASHINGTON TOURNAMENT

PROTEIN . . . . . 14% OF DAILY CALORIES
FAT . . . . . 18% OF DAILY CALORIES
CARBOHYDRATES . . . . . 68% OF DAILY CALORIES
ALCOHOL. . . . . 0% OF DAILY CALORIES

. . . A program to help Martina play her very best.

at top speed. Finally, she runs in place and does rapid side-to-side stutter steps that improve balance and speed. Finished? No way. Once the workout is done, it's time for a 50-minute practice on court.

"No player is as well conditioned as Martina," says Chris Evert Lloyd.

"The computer has created the optimum plan for her body," says Dr. Haas. "If she can keep it up, Martina will still be winning Wimbledon at 40 years of age."

Martina knows it takes more than great physical conditioning to play winning tennis against world-class opponents. That's why she uses a computer to help identify strengths and weaknesses in her opponents and herself.

Data about a match is fed into the computer. The *Smartina* program then takes the data and breaks each match down into tiny parts. From this, Martina learns the probability of success of a specific shot in a specific situation against a specific opponent. She studies this information before a match to learn which shots won her points and which were failures.

"The computer," says Martina, "was the most accurate scout I have ever had."

THE BIG MATCH

Even before last year's breakthrough victory at the U.S. Open, *Smartina* was providing Martina with insights about her opponents. At Wimbledon, you could see Robert Haas busily charting Martina's matches on his portable computer. Martina won Wimbledon as well as the Australian Open in 1983. But it was during Martina's preparations for the U.S. Open that year that *Smartina* most clearly proved its worth.

Like a scholar, Martina studied every part of Chris Evert Lloyd's game. She knew Chris's reactions almost better than Evert Lloyd did herself. So when Martina came to the net, she had a solid idea of where Chris would hit the ball. Martina even developed a special shot—a low, skidding forehand to Evert Lloyd's backhand—that, according to the computer, could help Martina win the point.

That match is history. Martina won in straight sets and took her first U.S. Open. She hopes to duplicate the feat at this month's Open.

"Martina is so confident now," adds Haas, "that she no longer consults the computer. She's thinking ahead on court, setting up seven and eight-stroke combinations."

Smartina has helped by showing this very talented player how to play her best every time she goes out on the court. "My motivation now," says Martina, "is winning major titles, winning a place in tennis history, being the best ever."

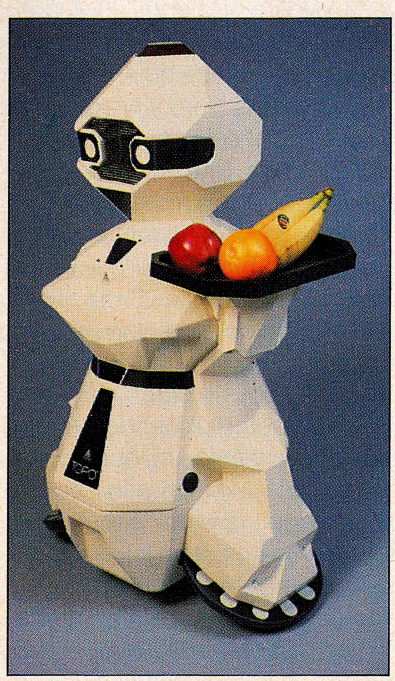
Martina knows that the computer can't help her once the match begins. But as long as Martina keeps in shape and does her computer homework, she will be an especially tough opponent.

WAYNE KALYN is a freelance writer who has been covering tennis for the past ten years.

Is There a Robot in the House?

ONE FAMILY'S LIFE WITH TOPO

BY FRED D'IGNAZIO



As a waiter, Topo the robot could drive you bananas—as a pal, he's just great.

In science fiction, robots do everything—walk the dog, prepare meals, and generally make life a whole lot easier. In real life, today's home robots aren't quite so helpful.

But while robots like Topo (from Androbot) aren't very advanced, they can still make life extremely interesting.

ENTER Contributing Editor Fred D'Ignazio and his family have lived with a Topo for a year. This story tells what it's like when a robot moves in.

WAKE-UP CALL

"Good morning, folks. It's 6 AM. Today..."

I rolled over in bed and smacked the off switch on the clock radio. Quiet as a mouse, I slipped out of bed and into my study. I turned on the Apple computer, grabbed the joystick and floored it.

Nothing happened. Topo, our three-foot-tall new home robot, didn't move an inch. I had forgotten to turn on the rest of the equipment.

I flipped on the radio antenna on top of the Apple, then went over to Topo and punched his green button. His backside lit up like a Christmas tree. I leaned on the joystick and Topo lurched forward.

I pushed the joystick and Topo knocked down a stack of books, swiveled around, and came rolling back toward me at top speed.

Topo's mission was not exactly going as planned.

Sometimes you have to give your robot a helping hand. I carried him to the door of my study. Pushing the joystick forward, I watched Topo disappear through the doorway, heading for my daughter Catie's bedroom. His mission: enter her room, roll up to her bed, and do a robotic flashdance to wake her up. (Topo is a good flashdancer. You just jiggle the joystick back and forth.)

I knew that Topo couldn't see

© WAYNE SCARBERRY

where he was going. The problem was that I couldn't see where Topo was going, either. A prisoner of the joystick, I was on a very short tether to my Apple computer.

So I had to guide Topo based on where I thought Catie's bedroom was. The loud clunks I heard every time I ran Topo into the wall told me when I was wrong.

After I had awakened Catie, I planned to turn Topo loose on my son, Eric. Both Catie and Eric are ferocious when you wake them up in the morning—like a pair of half-starved lions. That's why I was sending Topo to do the job. The kids could grumble at him for waking them up. He never stops smiling. His smile is painted on.

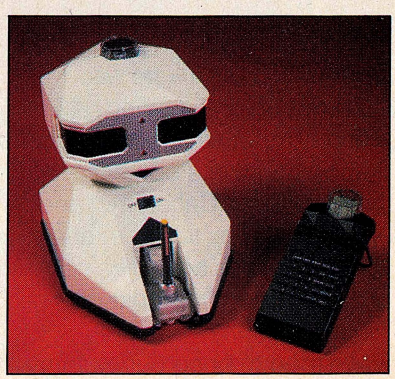
I maneuvered Topo around. I backed him up, spun him to the left and marched him up to Catie's bed. There was a clunk, a loud shriek, then giggling.

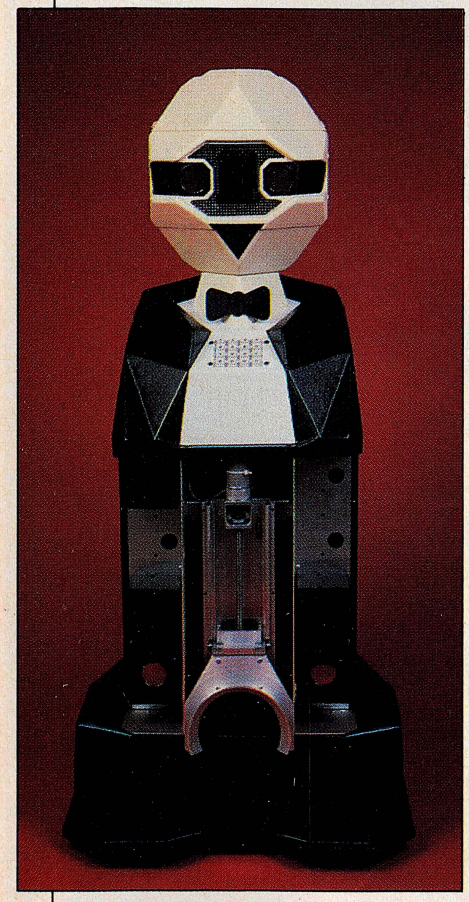
Success! I put down the joystick and ran to Catie's room. She wasn't there. Neither was Topo.

There was a crowd in the bathroom. The kids were there giggling. Topo was there looking sleek and happy. My wife Janet was there, too. She didn't look happy. Topo had crashed into the bathroom door, marched in and threatened to climb in the bathtub. Janet wasn't used to bathing with a robot, so she had bonked Topo in the head to turn him off. She threw us all out.

Out in the hall, I analyzed the situation. I had gotten both kids to wake up smiling, but I had a new

ABOVE: Topo loves parties with the D'Ignazio family, but needs help blowing out candles. BELOW: Little "brother" F.R.E.D. can't flashdance like Topo, but can draw.





Topo's big "brother," B.O.B. (Brains On Board), is a smart dresser and the smartest Androbot.

problem: Janet was ready to pulverize me.

ROBOT MUMMY

The way Topo bangs his way around, you'd think he was indestructible. But when he first arrived, he wasn't in tiptop shape.

Topo came in a box big enough for King Kong. Catie, Eric, and I opened the box together and found Topo lying face down in a cushion of plastic foam. He looked like a robotic mummy.

We tried to bring our mummy to life, but couldn't. The manual said an overnight charge would give him enough juice to buzz around the house for hours. But the manual was wrong. We charged him for two days, and all Topo could manage was an electronic burp.

Luckily, we had lots of friendly robot experts at Data Base, a local computer and robot store. The people at Data Base took back our ailing Topo and gave us a new one. Our new Topo has proven to be a trouper. He has run over the cat's tail, smashed into dozens of walls, and been bonked on the head. But he still comes to life each time you pop the green button.

DANCING MACHINE

As I mentioned, Topo is a great flashdancer. My daughter, Catie, also loves to dance. Now Topo has become Catie's favorite dance partner.

Topo will obey a computer joystick, or can be programmed to obey instructions written in TOPO-BASIC or Logo. Catie learned how to program in Logo at camp last summer. With Topo hooked up to the computer, Catie can give him Logo commands like `TFD 50` (**T**opo go **F**orwar**D** 50 units) or `TRT 90` (**T**opo turn Righ**T** 90 degrees), and he will dance around.

Catie programs various dance steps into Topo. Then she turns on the stereo and dances with him. She also puts "delay" loops in her Logo procedures to slow Topo down to the beat of the music.

Catie also created several Logo programs to make Topo "take the lead." This was accomplished with the RANDOM primitive, a program command that makes Topo move unpredictably. He becomes a fast, quirky dance partner, and Catie tries to keep up with him. Every so often Catie would add a rotate command—`TRT 360` or `TLT 360`—and she and Topo would spin across the dance floor.

ROOM SERVICE

When Catie and Eric first got Topo they figured they could program him to do chores like taking out the trash, doing the dishes and picking up their rooms.

But as a maid or butler, Topo is a flop. Catie worked for several days writing a Logo program to have Topo pick up her room. He worked perfectly, except that she had to tell him where every dirty sock was and put each sock in his robot hand. Then she had to follow him to the laundry basket take the sock out of his hand, and put it in the basket.

One of Eric's friends programmed Topo to help make Eric's bed, but three-foot-tall Topo was too small to hold the bedspread in his hand. So Eric draped the bedspread on Topo's head. This seemed to work fine until Topo encountered a bug in the program. The bug made Topo pull the bedspread out of Eric's hands, and race out of the bedroom with the bedspread on his head.

Topo was heading for the stairs when Eric caught him and bonked him on the head to shut him off.

After a couple of weeks of living with Topo, my family has stopped trying to make him into a household servant. He just wasn't cut out for the job.

Topo isn't much of a worker. But neither is our fat black cat, Mowie. Yet we've always loved the cat. Now we feel the same way about Topo, even if he is just a machine. He has the makings of a lovable robot.

FRED D'IGNAZIO is an ENTER contributing editor.

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NARRATOR: Well, Mickey could see she wasn't asking the right question. The first step in solving any problem is to ask yourself:
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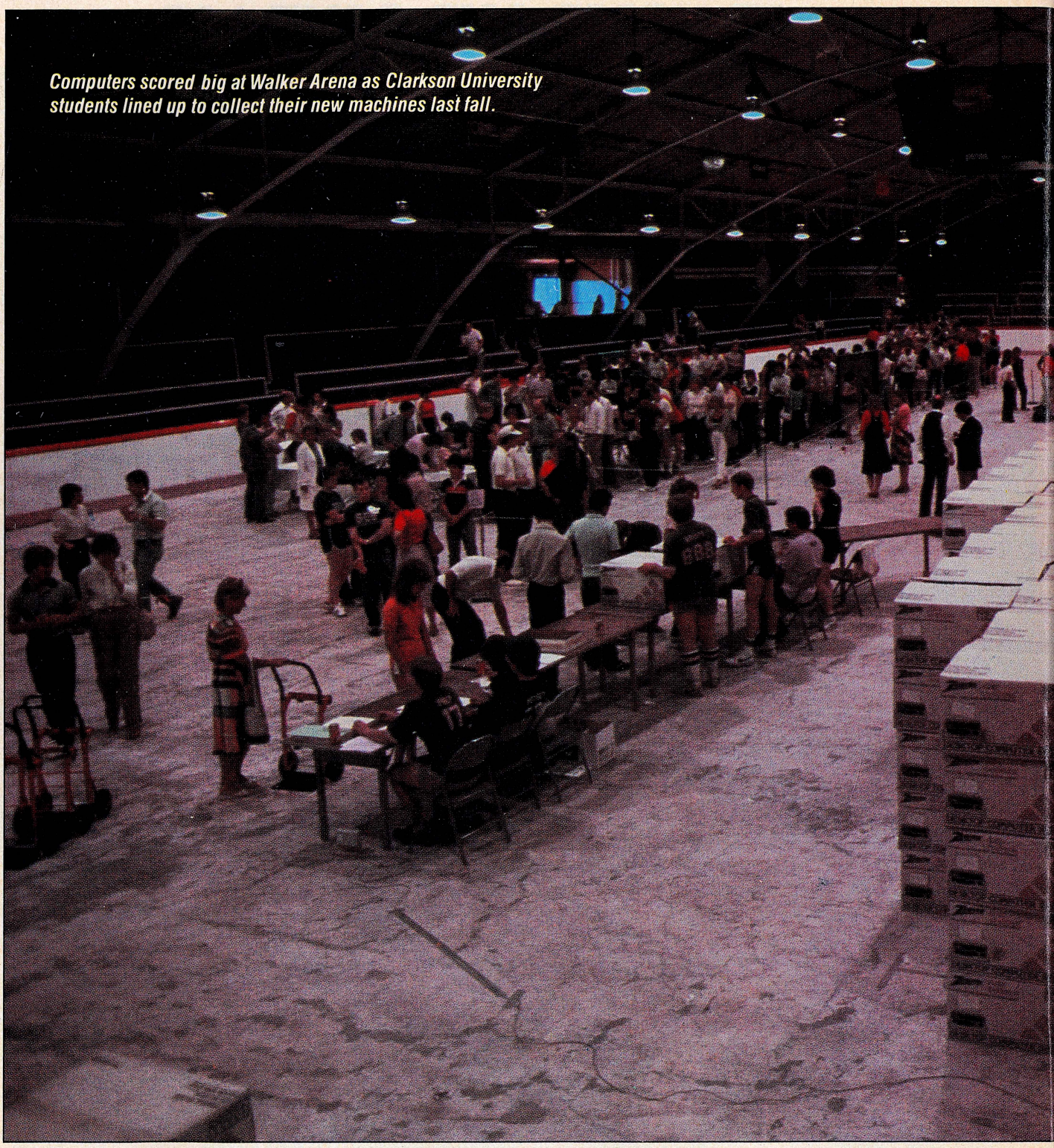


Computers scored big at Walker Arena as Clarkson University students lined up to collect their new machines last fall.

COURTESY OF ZENITH, INC.

COMPUTERS GO

TO COLLEGE

LISA AND KATHY'S YEAR OF LIVING DIGITALLY

BY SUSAN JARRELL AND BILL CAMARDA

Clarkson University's Walker Arena was jam packed—but not with cheering fans. On this August afternoon, the arena was filled with 7200 cartons of computer software, hardware, peripherals and documentation. Hundreds of freshmen were struggling to get their 128K Zenith Z-100 computers, disk drives, monitors, software, and fat looseleaf manuals out of the arena and into their dorms.

This wasn't the scene of a computer giveaway. It was Clarkson University entering the computer age. Clarkson, in Potsdam, New York, is one of the first colleges in the country to *require* new students to own a computer. To find out what life is like at these new all-computer schools, ENTER followed Kathy Dawson and Lisa Partch, freshmen roommates, through their first year.

Kathy, 18, came from New Harbor, Maine. She had worked only briefly on a computer, and had done programming in BASIC. Lisa, also 18, is from Potsdam. Lisa's father teaches chemical engineering at Clarkson. She had learned FORTRAN on her family's Apple.

During this first year with the Zenith, both girls sometimes wanted to boot the computer out the window. Mostly, they were thankful to have a computer (or two) in the room. *(Continued on next page)*

COURTESY OF ZENITH, INC.

LEFT: ***Getting her computer back to the dorm was Kathy Dawson's first challenge.***

THE FIRST DAY

The first day of school seemed a lot longer than 24 hours to Kathy. She and her father had driven to Clarkson all the way from Maine. At the Walker Arena, Kathy and Lisa loaded their computers into Kathy's father's truck. Kathy remembers how the truck sank a bit as the boxes were loaded on.

Back at the dorm, the girls began cramming two computers, two stereos, cables, and a zoo of stuffed animals into one small dorm room.

One problem: Clarkson wanted freshmen to save their computer boxes, but there was no place to put them. "We can either put them in the hockey rink, or we can play hockey," David Bray, Dean of Educational Computing said. "We're going to play hockey."

FIRST WEEK

"What I really want to know is how to get the computer going," complained Kathy. "They're not telling."

Lisa and Kathy complained that computer orientation was not very helpful. It consisted of lengthy lectures about maintenance, peripherals, and why Clarkson had chosen the Zenith 100. ("We're an engineering school, so we need a computer with sophisticated graphics," explained Clarkson spokesperson Donna Lee.)

Lisa and Kathy began computing on their own. But using a new machine is tougher than it looks. After several unsuccessful tries at formatting disks, Lisa sighed: "This is really different from the Apple. I guess I don't know as much as I thought I did." So it was back to the lecture hall.

The girls had more problems. While working on a computer program, they decided to take a popcorn break. But when the popper was plugged in, all the lights went out. "We'd blow a fuse every time we turned on the popper," says Kathy. "Now we make popcorn in the hall." That created another problem: "Everyone grabs a handful when they walk by."

OCTOBER

Lisa and Kathy were starting to like their Z's. They felt they'd got their money's worth. Students pay $200 a semester and a one-time $200 maintenance deposit. Four years and $1800 later, they get the computer.

Slowly, as the weeks passed, the two Zeniths became a part of their lives. Lisa perched a stuffed animal on her Z. Kathy put a small plant on her monitor. "Plants do well with lots of heat," she explained.

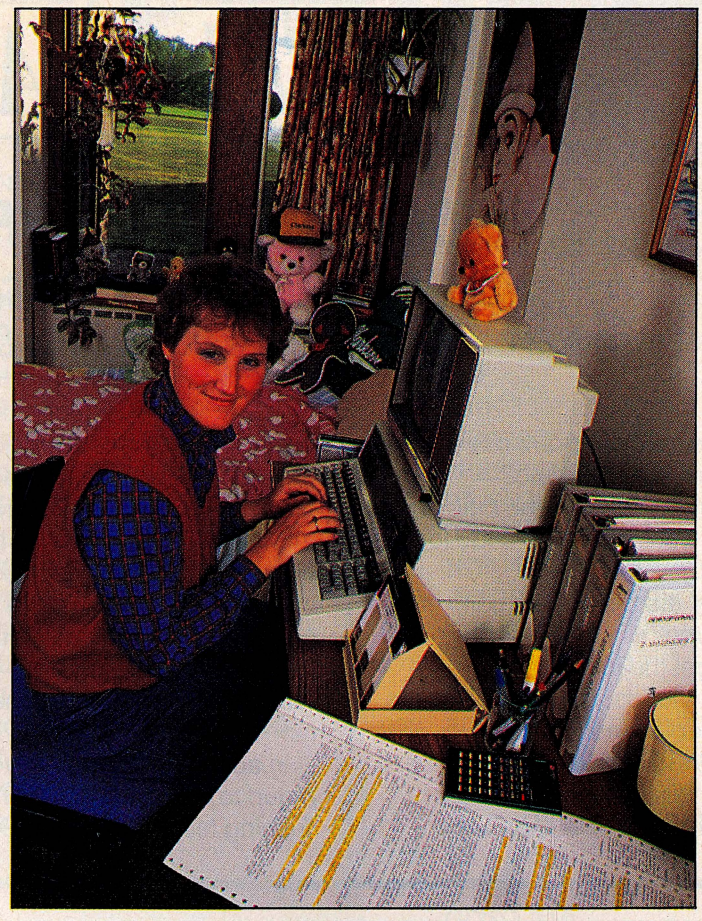
NOVEMBER

At first, Kathy's printouts looked strange. "In the beginning, there weren't any margins and parts of the paper were chopped," she recalls.

Engineering students could bring disks to class. But Kathy and Lisa were taking English and chemistry, so they had to bring printouts to class—which meant that messy papers were a problem. The girls had to print their papers at the school's central printer room, or on a friend's printer. Gradually, the printing improved.

Bit by bit (and byte by byte), the girls were becoming "friends" with their computers. This was fortunate: they needed the computers a

RIGHT: ***Lisa Partch learned to work the Z-100—and to solve the "popcorn problem."***



© JONATHAN WENK/BLACK STAR

lot. But it wasn't *all* work. They soon discovered that schools with computers have different kinds of parties. "Halloween was great," recalls Lisa. "There was a bunch of human Zenith computers running around."

JANUARY

All you could see outside the dorm windows was snow. Maybe that's why student computer pranks began. Lisa and Kathy were no exceptions. "We started sending funny letters to a friend using the word processing system," Kathy explains. He couldn't identify the handwriting. The guys downstairs, says Lisa, "use the system to list girls they think are cute."

About the same time these pranks began, something else started—cheating. Computer cheating was something new at Clarkson. Some students would copy homework assignments from disks and make changes. Two assignments would be handed in, but only one student had really done the work.

"Two guys down the hall copied someone else's disk," says Lisa. "When the professor found out, he said they had to 'share' the grade. They both got half credit—which is failing." Gradually the cheating let up. Teachers now give each class section a different assignment.

Meanwhile, as the girls became more comfortable with the computer, they started using it for themselves. "We keep finding new ways to use it for creative writing, resumes, and invitations," says Lisa. "Other students use the Z to balance checkbooks and play games."

Kathy and Lisa decided to expand their system. The girls had been using a friend's printer, but "since we use the Z so much," explains Lisa, "we decided to invest in our own."

MARCH/APRIL

This is really awful," says Lisa. "I'm not sure what I'm going to do now."

School was coming to its end. Lisa was worried about Clarkson's summer computer-rental policy. The University wanted students to put down a $1,000 deposit in order to take their computers home for the summer. Otherwise the computers would be stored at Clarkson, with no guarantee they'd get the same machines back in the fall.

"Not all the Zeniths are the same," says Kathy. "One guy broke off a prong the printer plugs into. We spent all this money to buy a printer. What would happen if we got his Zenith next year?"

SCHOOL'S OUT

For all the small problems, Lisa and Kathy agreed that having their own computers helped. For Lisa, it made studying easier. "In a course like calculus, a computer graph helps you visualize the problems."

Both decided to pay the deposit on their computers. Kathy saw only one problem with bringing the computer home: "I'll compete with my brother for computer time," she said. "He'll be playing games."

Both girls plan to share a dorm room again. "I'm looking forward to the fall," says Lisa. "School's more fun once you learn to use the Z."

SUSAN JARRELL is an associate editor of ENTER. BILL CAMARDA is a freelance writer.

BASIC TRAINING

PROGRAMS FOR YOUR COMPUTER

Adam, Apple, Atari, Commodore 64, IBM PC, TI 99/4A, Timex-Sinclair, TRS-80 Color Computer, VIC-20

Q: How many hackers does it take to screw in a light bulb?
A: Two. One to hold the bulb and one to get the access code for the socket.
Q: Why did the hacker go to the ballgame?
A: To get the program.

Yes, friends, it's the latest craze to sweep the nation—hacker jokes. And now you, too, can be part of this fast-growing fad.

How? It's simple. Just write down your favorite hacker joke and send it in to BASIC Training. We will send you absolutely no money. No salesman will call. But we will print some of the best jokes in ENTER. And, at no extra cost—and for a limited time only (until this issue falls apart)—you can use the great programs in this month's BASIC Training.

In addition, this month we are proud to introduce a new BASIC Training feature called BASIC Plus. Every month, BASIC Plus will include helpful tips for the serious programmer, introduce you to advanced topics like assembly language programming, and help you with your programming problems.

Remember, that's BASIC Plus, right here in the new, improved BASIC Training. And if that doesn't work, we may start offering steak knives.

—Richard Chevat, Technical Editor

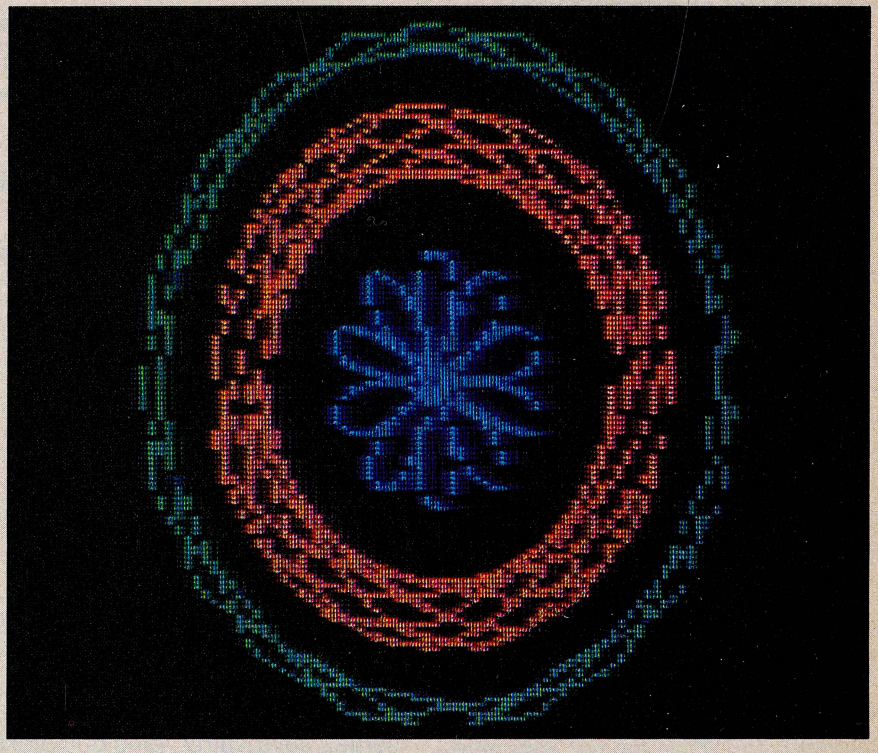
SPIRAL MANIA:

APPLE, ADAM, ATARI, TRS-80 COLOR COMPUTER, IBM

This program lets you create intricate spiral designs, using the trigonometric functions of your computer like SIN and COS.

Since you probably haven't taken trigonometry, and we've forgotten whatever we once knew about it, we're not going to bother explaining exactly how this works. All you have to do is type in three numbers. The first represents the size of the outer circle,the second represents the size of the inner circle and the third represents the location of the pen.

Not all combinations of numbers will fit on your screen. In the Color Computer version, large numbers may produce an error message. The Apple and Atari



Three of the designs you can create with Spiral Mania.

versions will ask for new numbers if the ones you input are too large. Some interesting combinations to start with are; 20, 6, 4 and 15, 7, 11. You can experiment with different colors, and try drawing different designs on the same screen. Remember, some colors are "invisible" since they are the same as the screen color.

Try fitting different patterns inside each other. Once the screen is filled up, you can draw with the "invisible" screen color. This program would make an interesting subroutine in a larger graphics program.

The program for Apple computers is printed below. Adaptations for the Adam, Atari, IBM and TRS-80 Color Computer follow.

APPLE:

```
10   REM SPIROGRAPH
20   ONERR GOTO 50
30   HOME : HGR
40   VTAB 22
50   PRINT "PLEASE TYPE
     THE RADIUS OF THE
     OUTER CIRCLE,INNER
     CIRCLE AND DISTANCE
     INTO INNER CIRCLE OF
     THE PEN."
60   INPUT A,B,H
70   REM SCALE CIRCLES TO
     FIT
80   IF A < B THEN Z = A:A =
     B:B = Z
90   C = A - B
100  D = C / B:L = B * H
110  E = A:F = B
120  G = F
130  F = E - F * INT (E / F)
140  E = G
150  IF F < > 0 THEN 120
160  E = B / E
170  PI = 3.1415926536
180  PRINT "DO YOU WANT TO
     ERASE THE SCREEN Y/N?"
190  INPUT A$
200  IF A$ = "Y" THEN HGR
210  PRINT "ENTER COLOR
     0-7"
220  INPUT Z
230  IF Z < 0OR Z > 7 THEN
     210
240  M = SQR (D)
250  HCOLOR = Z
255  REM FIRST POINT
260  HPLOT 139,90- C - L
270  POKE - 16302,0
280  FOR X = 0TO 2 * PI * E
     STEP PI / 16 / M
285  REM DRAW
290  HPLOT TO C * SIN (X) - L *
     SIN (D * X) + 139,90- C *
     COS (X) - L * COS (D * X)
300  NEXT
310  POKE - 16301,0
320  GOTO 50
```

ADAM: Delete lines 270and 310.

ATARI: Delete lines 40,270,310. Add or replace these lines:

```
5    DIM A$(1)
20   TRAP 50
30   ? CHR$(125):GR.8
45   ? CHR$(125)
200  IF A$ = "Y" THEN GR.8
210  ? "ENTER COLOR 0
     OR 1"
230  IF Z <0 OR Z> 1
     THEN 210
250  COLOR Z
260  PLOT 159,90 - C - L
290  DRAWTO C*SIN(X)
     - L*SIN(D*X)
     + 159,90 - C*COS(X)
     - L*COS(D*X)
320  GOTO 45
```

TRS-80 COLOR COMPUTER: Delete lines 20 and 40. Add or replace these lines:

```
30   CLS:PCLS
45   CLS
200  IF A$ = "Y" THEN PCLS
210  PRINT "ENTER COLOR
     5 - 8"
220  INPUT Z
230  IF Z < 5 OR Z> 8 THEN
     210
235  PRINT "PRESS
     ENTER TO START.
     PRESS ANY KEY TO
     DRAW AGAIN WHEN
     DONE."
236  INPUT K$
250  PMODE 1,1:SCREEN 1,1
260  COLOR Z,5
270  LINE - (128,90 - C - L),
     PRESET
290  LINE - (C*SIN(X) -
     L*SIN (D*X) + 128,90
     - C*COS(X)
     - L*COS(D*X)), PSET
310  K$ = INKEY$
315  IF K$ = "" THEN
     GOTO 310
320  GOTO 45
```

IBM PC WITH COLOR GRAPHICS CARD, AND IBM PC JR: Delete lines 20, 40, 180, 190, 200, 270, 310. Add or replace these lines:

```
230  IF Z<1 OR Z> 3 THEN
     GOTO 210
235  PRINT "PRESS
     ENTER TO START.
     PRESS ANY KEY TO
     DRAW AGAIN WHEN
     DONE"
236  INPUT K$
250  SCREEN 1:COLOR 4,Z
260  PSET (139,90 - C - L),Z
290  LINE - (C*SIN(X) -
     L*SIN(D*X) + 139,90 -
     C*COS(X) -
     L*COS(D*X)),Z
315  I$ = INKEY$
316  IF I$ = "" GOTO 315
```

—David Lewis

(BASIC Training continues on next page)

(BASIC Training cont. from previous page)

TYPING TRAINER:

APPLE, COMMODORE 64, IBM, TRS-80 COLOR COMPUTER, TI-99/4A, TIMEX-SINCLAIR 1000, 1500, 2068, VIC 20

What's the most important skill you need to use a computer? Logic? Algebra? The cash to buy one? Sorry, if you said any of those, you're wrong. The most important computer-related skill is *typing*. Anyone who has spent time copying a program out of BASIC Training can testify to that.

Now, just by coincidence, we have a little program that will help you improve your typing. When you run it, a letter will appear on the left hand side of your screen. If you type the correct key in time, the letter will disappear. If you're too slow, a second letter will appear to the left of the first one.

The more letters you miss, the longer the string on your screen will become. If it reaches the other side, you lose, and the computer will tell you your score.

Here's how it works. The program randomly chooses a letter and adds it to the existing letters in lines **130-150**. It checks to see if the letters have reached the right side of the screen in lines **160** and **170**. Then it prints the letters **(P$)** in line **190**.

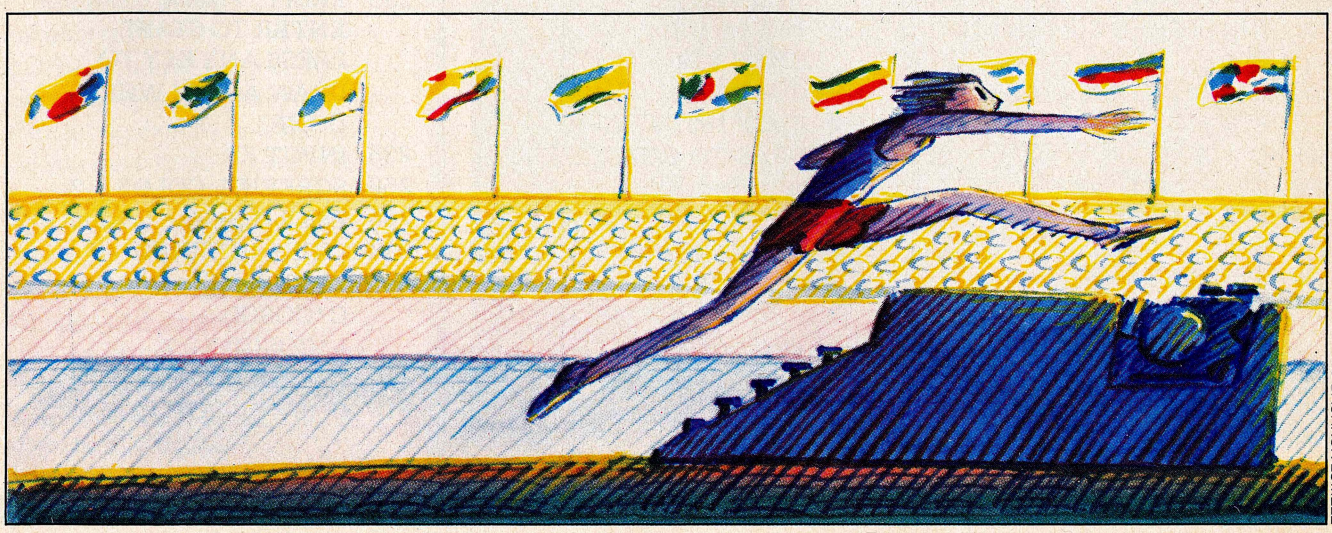
Lines **200-300** are a loop where the computer gives you a chance to hit the right key. You set the LEVEL, or number of chances you get, at the beginning of the program (lines **60-100**).

Below is the program for the Commodore 64. Following that are instructions for adapting the program for other computers.

COMMODORE 64:

```
10   REM TYPE
20   PRINT CHR $(147)
30   LET LEVEL=0
40   PRINT "HOW WELL DO
     YOU TYPE?"
50   PRINT "1 BEGINNER,
     2 ADVANCED,
     3 PROFESSIONAL"
60   INPUT W
70   IF W=1 THEN LET
     LEVEL =200
80   IF W=2 THEN LET
     LEVEL =100
90   IF W=3 THEN LET
     LEVEL =50
100  IF LEVEL=0 THEN
     GOTO 10
105  REM P$=LETTERS,
     C= CORRECT
110  LET P$=""
120  C=0:T=0
125  REM X=CODE FOR
     RANDOM LETTER
130  LET X=INT(RND(1)*26)
140  LET X$=CHR$(65+X)
150  LET P$=X$+P$
155  REM HOW MANY?
160  LET L=LEN(P$)
170  IF L>38 THEN GOTO
     320
180  PRINT CHR $(147)
190  PRINT "    ";P$
200  FOR I=1 TO LEVEL
210  LET T$=LEFT$(P$,1)
220  GET I$
230  IF I$<>"" THEN LET
     T=T+1
235  REM CORRECT KEY?
240  IF T$<>I$ THEN GOTO
     300
245  REM ERASE LETTER
250  LET Q$=MID$(P$,2,L)
260  LET P$=Q$
270  PRINT CHR $(147)
280  PRINT "    ";P$
290  LET C=C+1
300  NEXT I
310  GOTO 130
320  PRINT "WOW YOU GOT
     ";C;" CORRECT"
```

(Program continues on next page)



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(Program continued from previous page)

```
330  PRINT "IN";T;"TRIES"
340  PRINT "DO YOU WANT
     TO TRY AGAIN? (Y/N)"
350  INPUT V$
360  IF V$="Y" THEN GOTO 10
```

VIC 20: Replace this line:

```
170  IF L> 19 THEN GOTO 320
```

APPLE: Replace or add these lines:

```
5    POKE -16368,0
20   HOME
130  X = INT (RND(1)*26)
180  HOME
220  J = PEEK (-16384)
221  POKE -16368,0
222  IF J < 127 THEN GOTO
     300
225  I$ = CHR$(J-128)
230  T = T + 1
270  HOME
```

IBM: Replace these lines:

```
20   CLS
130  X = INT(RND*26)
180  CLS
220  I$ = INKEY$
270  CLS
```

TRS-80 COLOR COMPUTER: Replace or add these lines:

```
20   CLS
130  X = RND(26)
140  X$ = CHR$(64 + X)
170  IF L > 29 THEN GOTO 320
180  CLS
220  I$ = INKEY$
270  CLS
```

TIMEX-SINCLAIR 1000,1500: Replace or add these lines:

```
5    RAND 0
20   CLS
70   IF W = 1 THEN LET
     LEVEL=50
80   IF W = 2 THEN LET
     LEVEL=20
90   IF W = 3 THEN LET
     LEVEL=8
110  LET P$ ="   "
120  LET T = 0
121  LET C = 0
130  LET X = INT(RND*26)
140  LET X$=CHR$ (38+X)
170  IF L> 30 THEN GOTO 320
180  CLS
210  LET T$ = P$(1)
220  LET I$ = INKEY$
230  IF I$ = "   " THEN GOTO
     300
231  LET T=T + 1
240  IF T$ = I$ THEN GOTO
     250
241  GOTO 300
250  LET Q$ = P$(2 TO  )
270  CLS
```

TI 99/4A: This is a complete program. NOTE: Only one letter will appear at a time.

```
10   RANDOMIZE
20   CALL CLEAR
30   LEVEL = 0
40   PRINT "HOW WELL DO
     YOU TYPE?"
50   PRINT "SLOW(1),
     MEDIUM(2), FAST(3)"
60   INPUT W
70   IF W = 3 THEN 140
80   IF W = 2 THEN 120
90   IF W <> 1 THEN 10
100  LEVEL = 60
110  GOTO 150
120  LEVEL = 30
130  GOTO 150
140  LEVEL = 15
150  C = 0
160  T = 0
170  L = 0
180  X = INT(RND*26)
190  T$ = CHR$(65+X)
200  L = L + 1
210  IF L > 25 THEN 370
220  CALL CLEAR
230  PRINT TAB(L);T$
240  FOR I = 1 TO LEVEL
250  CALL KEY(0,K,P)
260  IF P = 0THEN 350
270  I$ = CHR$(K)
280  T = T + 1
290  IF T$ <> I$ THEN 350
300  CALL CLEAR
310  L = L - 1
320  IF L > 0 THEN 340
330  L = 0
340  C = C + 1
350  NEXT I
360  GOTO 180
370  PRINT "YOU GOT   ";C;
     "  CORRECT"
380  PRINT "IN   ";T;
     "  TRIES"
390  PRINT "WOULD YOU LIKE
     TO TRY AGAIN Y/N?"
400  INPUT A$
410  IF A$ = "Y" THEN 10
```

—Daniel E. Cohn

MUSICAL DESIGNS: ATARI

Here's a short graphics program for Atari owners by Richard Bowman, age 13 of Austin, Texas.

```
10  SOUND 0,
    RND(1)*255,10,12
20  FOR X=1 TO 200
30  NEXT X
40  GR. 7+16: COLOR 1
50  PLOT RND(1)*158,
    RND(1)*78
60  FOR Y=2 TO 6
70  DRAWTO
    RND(Y)*158,
    RND(Y)*78
80  NEXT Y
90  GOTO 10
```

—Richard Bowman

(BASIC Training cont. on next page)

BASIC TRAINING

(BASIC Training cont. from previous page)

CHALLENGE #8: MATH MAGIC

People who don't know much about computers think that to be a programmer you have to be a whiz at math. Get your Apple or IBM to print "hello" 15 times, and they're likely to think you're another Einstein. Of course, what these people forget is that a programmer hardly does any math at all—it's the computer that does all the calculations.

For this month's Challenge, we want you to write a program that shows off your computer's mathematical abilities. You could write a guessing game that uses numbers, a graphics program that uses trig functions like Spiral Mania in this issue, or a program that helps you study math for school. (Even programmers should know how to divide and multiply.)

We'll print the best programs and the winners will receive $50 and an ENTER T-shirt.

Send your program to CHALLENGE #7, ENTER Magazine, CTW, 1 Lincoln Plaza, N.Y., N.Y. 10023. All entries must be postmarked no later than October 22. We read every program that is sent in, but because we get hundreds of entries every month, we cannot reply to each of you.

Programs can be for any home computer, but please keep them under 75 lines. Remember to enclose a note telling us your name, age, T-shirt size, the computer the program was written for, and a brief description of what the program does.

And remember, if you have any other programs you think belong in ENTER, send them in to BASIC Training, at the address above. If we like your program, we'll print it and send you $25-50 and a T-shirt.

WINNERS OF CHALLENGE #5: BLAST OFF!

APPLE: PLUTON TRANSLATOR

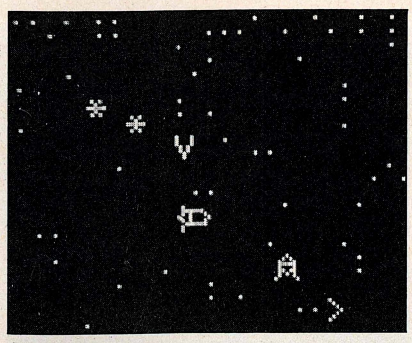
The theme of Challenge #5 was outer space, and did we get some far out entries! Most of you were concerned with defending the earth from alien invasions. But 12-year-old Billy Kish from Newburgh, Indiana, took a friendlier approach to a possible close encounter. His program is designed to be used to communicate with beings from the planet Pluton. All you have to do is type in English words (up to 100 characters) and your Apple will produce the equivalent in Plutonese.

```
10  REM PLUTON
    TRANSLATOR
20  REM LOAD SUBROUTINE
30  FOR AD = 770 TO 790
40  READ BYTE
50  POKE AD,BYTE
60  NEXT
70  DATA 173,48,192,136,208,
    5,206,1,3,240,9,202,208,
    245,174,0,3,76,2,3,96
80  DIM L$ (27),N(27),D(27)
90  DIM W$ (100),V(100)
100 REM LOAD DATA
110 FOR I = 1 TO 27
120 READ L$ (I): READ D(I)
130 READ N(I): NEXT
140 DATA A,17,49,B,70,30,
    C,71,45,D,80,20,E,55,44
150 DATA F,22,15,G,27,27,H,
    10,17,I,23,24
160 DATA J,38,26,K,64,14,
    L,21,23,M,13,34,N,28,33
170 DATA O,57,42,P,46,32,Q,
    48,31,R,29,35
180 DATA S,51,11,T,41,13,U,46,
    28,V,19,29
190 DATA W,47,46,X,50,20,Y,
    11,12,Z,18,1,?,1,1
200 HOME
210 VTAB 12: HTAB 10
220 PRINT "PLUTON
    TRANSLATOR"
230 VTAB 13: HTAB 6
240 PRINT "APPROVED FOR
    ALL INTER SPECIES
    CONTACT"
250 POKE 34,15
260 PRINT : PRINT
270 PRINT "ENTER ENGLISH
    WORDS AND PRESS
    RETURN"
280 PRINT "PLEASE WAIT
    FOR TRANSLATION."
290 REM W$ = MESSAGE
300 FOR I = 1 TO 100
310 GET W$ (I)
320 IF W$ (I) = CHR$ (13)
    THEN 340
330 PRINT W$ (I);: NEXT
340 FOR J = 1 TO I
350 REM 27 = NOT A LETTER
360 V(J) = 27
370 FOR K = 1 TO 26
380 REM MATCH LETTERS
    WITH NOTES
390 IF W$ (J) = L$ (K) THEN
    V(J) = K
400 NEXT : NEXT
410 REM PLAY TRANSLATION
420 FOR J = 1 TO I - 1
430 POKE 768,N(V(J))
440 POKE 769,D(V(J))
450 CALL 770: NEXT
460 GOTO 260
```

—*Billy Kish*

SPACE TRAFFIC: TI 99/4A WITH EXTENDED BASIC

A lot of entries were graphics programs of spaceships, flying saucers and other extraterrestrial craft. But only Daniel McCloskey, a 17-year-old from Philadelphia,

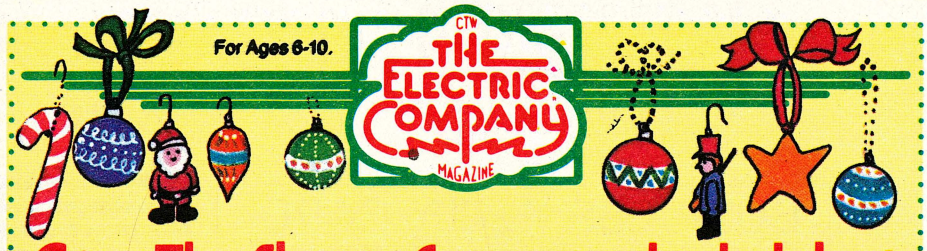


BASIC TRAINING RECOMMENDS

The best game program books are the ones that give you games and teach you how they work. Now there's a new book out for Texas Instru- and Commodore 64 s that does exactly that. led *Zappers: Having ogramming and Play- Games For the TI (or Commodore 64)* by Mullish and Dov r.

h program in *Zappers* ompanied by several of text that really help derstand how the pro- works. We especially he line-by-line descrip- at lets you step through ogram and see what statement does. In addi- here is an in-depth ption of each program everal suggestions for es and improvements u can make to it. authors start each with a general introduc- hey give you tips on in and editing and pro- , and even a little of your computer. aware, however, that f the programs in *Zap-* re versions of common s like Tic Tac Toe, Hang- nd Sound/ Sight Simon. you've been program- for a while, you've bly seen these games y.

pers is published by and Schuster and $9.95.



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8HYW4

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☐ Start now.
☐ Start with holiday issue and send me gift card(s).
☐ Enclosed is a separate sheet for additional gifts at $8.95 each.

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ADDRESS

CITY

STATE _____ ZIP

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DETACH HERE AND MAIL TODAY.

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8HYX2

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CHILD'S NAME _____ AGE

ADDRESS

CITY

STATE _____ ZIP

☐ Start now.
☐ Start with holiday issue and send me gift card(s).
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(BASIC Training cont. from previous page)

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```

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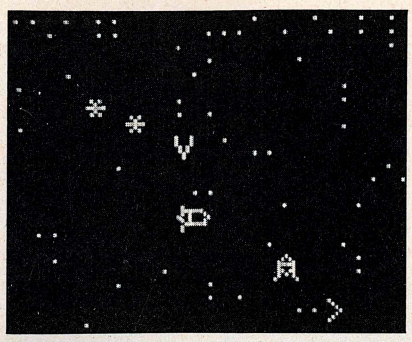
SPACE TRAFFIC: TI 99/4A WITH EXTENDED BASIC

A lot of entries were graphics programs of spaceships, flying saucers and other extraterrestrial craft. But only Daniel McCloskey, a 17-year-old from Philadelphia, wrote a program that showed how to avoid intergalactic traffic jams. His program is a display of traffic control between planets.

```
10  REM SPACE TRAFFIC
20  RANDOMIZE
30  CALL CLEAR
40  DISPLAY AT (12,1) BEEP:
    "WHAT YOU ARE ABOUT
    TO SEE": "IS A DISPLAY
    OF TRAFFIC": "IN OUTER
    SPACE": "PRESS ANY KEY
    TO BEGIN"
50  CALL KEY(0,K,S)
60  IF S = 0 THEN 50
70  CALL CLEAR
80  CALL SCREEN(2)
90  CALL COLOR(2,16,1)
95  REM STARS
100 FOR I= 1 TO 2
110 FOR P= 1 TO 11
120 CALL HCHAR(I,INT
    (RND*28) +3,46)
130 NEXT P
140 NEXT I
150 FOR A = 1 TO 2
160 FOR B = 1 TO 24
170 CALL VCHAR(B,INT
    (RND*28) +3,46)
180 NEXT B
190 NEXT A
200 FOR I = 0 TO 14
210 CALL COLOR(I,16,2)
220 NEXT I
230 CALL CHAR(111,"10
    28444444444482")
240 CALL CHAR(140,"3844
    281000000000")
250 CALL CHAR(121,"80FC
    0201027E8080")
```



```
260 CALL CHAR(142,"00020
    50905020000")
270 CALL MAGNIFY(2)
280 CALL SPRITE(#1,111,
    16,150, 150-7, 0)
290 CALL SPRITE(#2,140,16,
    155,150,-7,0)
300 CALL SPRITE(#3,121,16,
    120,100,0,7)
310 CALL SPRITE(#4,142,
    16,120,90,0,7)
320 CALL SPRITE(#5,42,16,
    50,50,20,0)
330 CALL SPRITE(#6,42,16,
    60,70,0,20)
340 CALL SPRITE(#7,86,16,
    75,95,50,0)
350 CALL SPRITE(#8,62,16,
    175,175,0,50)
360 CALL SOUND(-4000,-7,
    0,2000,0,500,0)
370 GOTO 340
```

—Daniel McCloskey

HONORABLE MENTION

This program is by Jason Scott, age 11, of Winston, Oregon. It's not a winner, but we thought it deserved honorable mention. Not only was it the shortest entry, but it was the funniest.

```
10  CLS
20  PRINT "HUMANS SHOOT
    GALACTIC ALIENS"
30  GOTO 20
40  END
```

(BASIC Training continues on next page)

BASIC TRAINING RECOMMENDS

The best game program books are the ones that give you games and teach you how they work. Now there's a new book out for Texas Instruments and Commodore 64 owners that does exactly that. It's called *Zappers: Having Fun Programming and Playing 23 Games For the TI 99/4A (or Commodore 64)* by Henry Mullish and Dov Kruger.

Each program in *Zappers* is accompanied by several pages of text that really help you understand how the program works. We especially liked the line-by-line description that lets you step through the program and see what each statement does. In addition, there is an in-depth description of each program and several suggestions for changes and improvements that you can make to it.

The authors start each book with a general introduction. They give you tips on typing in and editing and programs, and even a little history of your computer.

Be aware, however, that most of the programs in *Zappers* are versions of common games like Tic Tac Toe, Hangman and Sound/ Sight Simon. So, if you've been programming for a while, you've probably seen these games already.

Zappers is published by Simon and Schuster and costs $9.95.

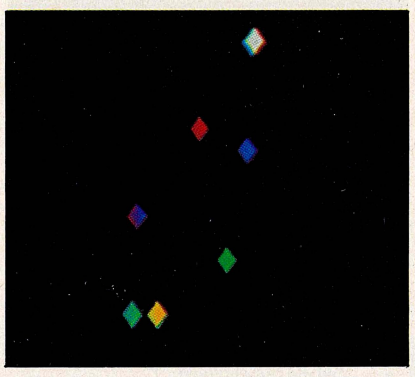
(BASIC Training cont. from previous page)

BOUNCING SPRITES: COMMODORE 64

Everybody knows that the Commodore 64 has sprites. (What exactly *is* a sprite? See this month's *BASIC Glossary.*) Sprites can make your graphics programming a lot easier—once you learn how to use them.

This program uses all eight sprites on the Commodore. To keep it simple, we've made all the sprites the same shape, a diamond. When the program runs, the sprites appear one at a time in the upper left hand corner of your screen and begin to move around. Once all eight appear, they begin to "turn off," one at a time, until they've all stopped. Then they begin to move again in an endless cycle.

```
10    REM SPRITES
20    PRINT CHR$ (147)
30    POKE 53280,0
40    POKE 53281,0
50    XY=53248:REM
      COORDINATES
60    EN=53269:REM
      ENABLING
70    COL=53287:REM
      COLORS
80    POI=2040:REM
      POINTERS
90    DAT=3840
95    REM SPEED AND
      DIRECTION DATA
100   DIM VX(8),VY(8)
110   FOR I=0 TO 7
120   READ VX(I):READ VY(I):
      NEXT
130   DATA 2,3,1,1,2,1,3,4,
      3,2,4,5,8,10,2,2
140   FOR I=0 TO 15
150   POKE XY+I,0:NEXT
155   REM SHAPE DATA
```



```
160   FOR I=0 TO 63
170   READ X
180   POKE DAT+I,X:NEXT
190   FOR I=0 TO 7
200   POKE COL+I,I+1
210   POKE POI+I,60:NEXT
220   POKE EN,255
225   REM NUM=NUMBER
      OF SPRITE
230   NUM=0:INC=1
235   REM NEW
      COORDINATES
240   FOR I=0 TO NUM
250   X=PEEK (XY+2*I)
      +VX(I)
260   IF X>255 THEN VX(I)
      =-VX(I):X=255
270   IF X<50 THEN VX(I)
      =-VX(I):X=50
280   POKE XY+2*I,X
290   NEXT
300   FOR I=0 TO NUM
310   X=PEEK (XY+2*I+1)
      +VY(I)
315   REM ADD OR
      SUBTRACT SPRITE
320   IF X>200 THEN VY(I)
      =-VY(I): X=200:
      NUM=NUM+INC:
      IF NUM=8 THEN INC
      =-1:NUM=7
330   IF X=200 AND NUM
      =0 THEN INC=1
340   IF X<50 THEN VY(I)
      =-VY(I):X=50
350   POKE XY+2*I+1,X
360   NEXT: GOTO 240
1010  DATA 1,128,0,3,192,0,7,
      224,0
1020  DATA 15,240, 0,31,248,
      0, 63,252,0
1030  DATA 127,254,0,255,255,
      0,255,255,0
1040  DATA 127,254,0,63,252,
      0,31,248,0
1050  DATA 15,240,0,7,224,0,3,
      192,0
1060  DATA 1,128,0,0,0,0,0,0,
      0,0,0
1070  DATA 0,0,0,0,0,0,0,0
```

—*Mark Sutton-Smith*

BASIC GLOSSARY

SPRITES: When people say a computer has "sprites," they mean it has a special chip which makes graphics easier to program and faster to execute.

If you want to create a picture in BASIC, you usually draw it line by line. Then, if you want to have it appear in another part of the screen, you have to go through the same steps all over again. But a sprite chip can remember a number of graphic designs and then display them very quickly at any location on the screen.

Sprites are designed pixel by pixel (a pixel is one dot on your TV screen). First, each dot must be plotted out on a piece of graph paper. Next, the design must be translated into numbers your computer can understand.

Sprites are especially useful for game programs and animation. For animation, each sprite is used as one of a series, like the frames of a movie or cartoon.

BASIC PLUS

The Debugging Blues: Part One

BY MARK SUTTON-SMITH

It happens all the time, to all of us—the programmer's nightmare.

You see a program you'd like to try out. Maybe it's in ENTER'S BASIC Training, or in a book. You turn on your computer and set the book or magazine next to you. Slowly, you type in the program, line by line. Your fingers get stiff and your neck aches. After a while, you get tired, so you stop typing in the REM statements, hoping to speed up the process. A few line numbers get changed, you think fast, recalculate and figure it will work out anyway.

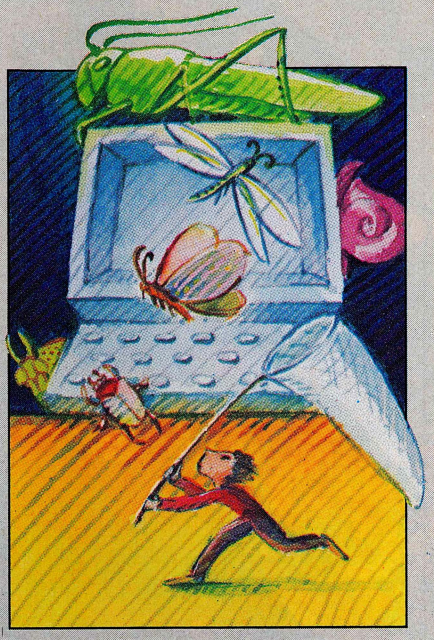
Finally, you're done. Now you get to type those long awaited letters, RUN. But no wild colors, weird sounds or fascinating graphics show up on your screen. All you see is the statement, "Variable out of range in line 37."

Welcome to the world of debugging.

Unless you're a computer yourself, as long as you're programming, you're going to be debugging, too. Debugging can be so frustrating that you'll want to throw your computer out the window. But like anything else, debugging is something you can learn and get better at with practice.

THE RULES OF DEBUGGING

There are a number of things you can do to head off major



© BACHRUN LOMELE

problems before you type in a single line. By obeying the simple rules of debugging we've noted below, you'll find yourself a much less frustrated computer user.

1. KNOW YOUR PROGRAM. Whether it's a program you've written, or one you're just copying, you should know what each segment does. You're less likely to leave out lines (it happens a lot) if you're following the steps the program is taking.

For example, if there are REM statements, read them. Make sure you understand what they mean. If you are writing the program, throw in a few REM statements of your own. And don't forget—you can also use a flow chart to help you decipher complicated programs—even ones you're copying.

2. TYPE IN THE PROGRAM IN BITE-SIZED MORSELS. It's much easier to debug 10 lines of code than 100. Type a part of the program and see if that much runs. Once the first part is running, add another part and see if the whole runs. If it doesn't, it's probably the new part that's giving you problems.

Remember, different parts of the program may depend on each other, so when you divide it up, follow Rule 1—know your program. Try to find logical breaks in the flow of the program, like subroutines or the lines that handle input.

3. TYPE CAREFULLY. This sounds obvious, but it's very important. The computer is a finnicky animal and won't take almost-right for right. If the program calls for a colon between statements, you'd better type a colon, not a semicolon or period.

Remember to take your time. You may be eager to see what the program will look like when it runs, but one misplaced period can cause you minutes—or even hours—of delay later on.

NEXT MONTH: Be a debugging detective—tips on debugging a program once you've typed it in.

Do you have questions about programming or other computer topics? Send them to BASIC Plus, ENTER, 1 Lincoln Plaza, New York, N.Y. 10023.

MARK SUTTON-SMITH is an ENTER Contributing Editor.

HOLIDAY FUN

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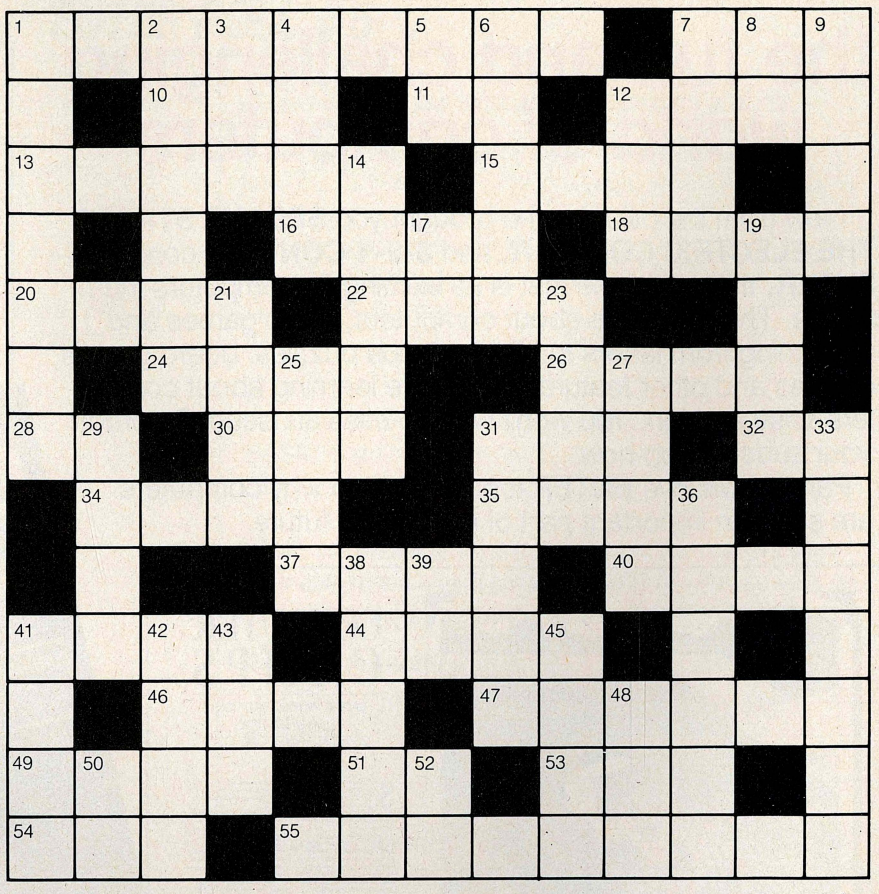
PENCIL CRUNCHERS

MICRO-WORDS

BY REBECCA HERMAN

There are more than 25 computer clues (marked with an asterisk) in this puzzle. Can you enter all the data and fill the screen? *(Answers on page 64.)*



ACROSS

*1. Diagram of a program
7. Heights (abbr.)
10. Gaseous light: __ __ __ N
11. Not she
*12. Command to rearrange text.
*13. Edit text a second time
*15. End program
*16. 1 byte + 1 bit = __ __ __ __ bits
18. Where you find pillows
*20. Operates a program
22. N.Y. baseball team
24. Comfortably: with __ __ __ __
*26. Words on the screen
28. Not yes
30. Liquid oxygen (abbr.)
31. Speak
32. Advertisement (abbr.)
34. North Atlantic Treaty Organization (abbr.)
35. With 23 Down, Spock's movie
37. You breathe through it
40. Travel on water
*41. Eight bits
*44. Computer tools: light __ __ __ __
46. One time
*47. The opposite of input
49. Los Angeles Police Department (abbr.)
*51. Type of memory that user can change: __ __ M
*53. To create blanks on screen, press the space __ __ __
54. Zodiac lion
*55. Star of Parker Brothers game

DOWN

*1. Computer language: short for Formula Translation
*2. Home video game for play with Dr. J: __ __ __ -on- __ __ __
3. To marry
*4. This starts an arcade game.
5. Open wide and say this
6. Command starts program again
7. Wish, desire
*8. It's used as a computer monitor (abbr.)
9. Tennis: games, match
12. Angry crowd
*14. Computer distributor: __ __ __ __ __ Sinclair
17. Compass point (abbr.)
*19. Facts and figures
21. It adds flavor to food
23. The sun is one (see 35 across)
25. Right away
27. Did you *see* this video game?
29. Sole, alone
31. Secretary's skill (abbr.)
*33. Removed from program
*36. Business computer company (Not IBM)
38. Drama set to music
39. Compass point (abbr.)
*41. Arcade game maker __ __ __ __ Y
*42. F.R.E.D.'s brother
*43. Command that stops program
*45. Program commands that let you leave and return: GO __ __ __ __
*48. Button that makes cursor go forward: space __ __ __
50. __, __, I, O, U
52. Before noon

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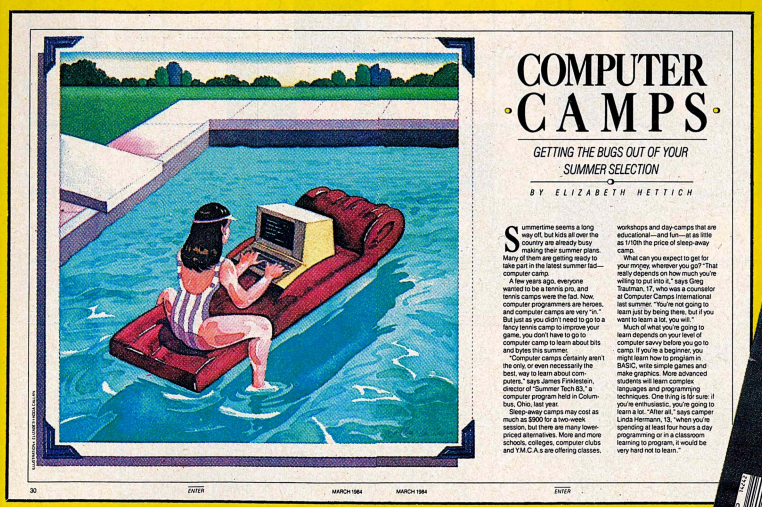

COMPUTER CAMPS

GETTING THE BUGS OUT OF YOUR SUMMER SELECTION

BY ELIZABETH HETTICH

Summertime seems a long way off, but kids all over the country are already busy making their summer plans. Many of them are getting ready to take part in the latest summer fad—computer camp.

A few years ago, everyone wanted to be a tennis pro, and tennis camps were the fad. Now, computer programmers are heroes, and computer camps are very "in." But just as you didn't need to go to a fancy tennis camp to improve your game, you don't have to go to computer camp to learn about bits and bytes this summer.

"Computer camps certainly aren't the only, or even necessarily the best, way to learn about computers," says James Finkelstein, director of "Summer Tech 83," a computer program held in Columbus, Ohio, last year.

Sleep-away camps may cost as much as $900 for a two-week session, but there are many lower-priced alternatives. More and more schools, colleges, computer clubs and Y.M.C.A.s are offering classes, workshops and day-camps that are educational—and fun—at as little as 1/10th the price of sleep-away camp.

What can you expect to get for your money, wherever you go? "That really depends on how much you're willing to put into it," says Greg Tauman, 17, who was a counselor at Computer Camps International last summer. "You're not going to learn just by being there, but if you want to learn a lot, you will."

Much of what you're going to learn depends on your level of computer savvy before you go to camp. If you're a beginner, you might learn how to program in BASIC, write simple games and make graphics. More advanced students will learn complex languages and programming techniques. One thing is for sure: if you're enthusiastic, you're going to learn a lot. "After all," says camper Linda Hermann, 13, "when you're spending at least four hours a day programming or in a classroom learning to program, it would be very hard not to learn."

MARCH 1984 ENTER

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INPUT

ENTER POLL #6

We'd like to find out about you, your experiences with computers, and how you liked (or didn't like) this month's issue of ENTER. Your answers help us plan future issues, so please be honest. We'll send ENTER T-shirts to 25 of you, picked at random.

Mail your questionnaire by Sept. 30 to: ***INPUT #6, ENTER Magazine, P.O. Box 777, Ridgefield, N.J. 07657***

I. Tell us about yourself:

Name_____

Address_____

City_____ State & Zip_____

Grade___Age___Male___Female___

T-shirt size Kids L___Adult S___ M___ L___

II. We'd like to know about you and computers:

A. Does your family own a computer?
___ No, and we have no plans to buy one at this time.
___ No, but we plan to buy one in the near future.
___ Yes. Which kind?___ Adam___ Apple
___ Atari___ IBM___ Commodore 64___ VIC-20
___ Timex/Sinclair ___ TRS-80 (model?) _____
___ T.I. 99/4A ___ Other (indicate name and model) _____

B. What peripherals does your family own? (Check all that apply) ___ Disk drive ___ Joysticks ___ Printer ___ Cassette drive ___ Modem ___ Touchpad ___ Light pen ___ Mouse ___ Other (explain)_____

C. What do you and your family do with your computer? (check all that apply) ___ Play games ___ Homework ___ Word process ___ Create Graphics ___ Write original programs. What else?
_____

D. Does your family own a home video game system?
___ Yes ___ No. If so, which one?_____
_____

III. Tell us what you think about this issue's articles.

A. Did you read our special section on getting "on-line"? ___ Yes ___ No. If yes, what did you think of the section? ___ Liked it ___ OK ___ Didn't like it. Are you already a subscriber to ___ CompuServe, ___ The Source or ___ any other information service? (If yes, which one?) _____
If not, are you thinking about going on-line? ___ Yes ___ No.

B. Did you try any of the programs in this month's BASIC Training?___ Yes ___No Which?_____
Did you get them to work? ___ Yes ___ No

IV. We are planning an article on what our readers wish their computers would (and wouldn't) do. Please help us by completing the following sentences:

A. I wish my computer could_____
_____

B. I wish my computer didn't_____
_____

V. In our January/February issue, ENTER will be presenting awards for 1984's best (and worst) achievements in the world of computers. We'd like to have your nominations for the best products that came out in 1984 in the following categories:

Arcade Game_____
Home Computer Game_____
Music/Art Software_____
Educational Software_____
What do you think was the most exciting thing to happen in the world of computers in 1984?_____
_____
The dumbest?_____

Last, but not least: In future issues of ENTER, I'd like to read about_____
_____
_____
_____
_____

NEXT

COMING IN OUR NOVEMBER ISSUE:

KNIGHT RIDER: FACT OR FICTION?: K.I.T.T., TV's computerized super car, can travel 300 m.p.h., turbo-jet over any obstacle, carry on a conversation, and even drive itself. Fantastic! But could a car like this really exist? ENTER goes behind-the-scenes to talk with the show's creators and computer experts. Find out how the super car stunts are done and what it would take to create a real K.I.T.T.

RIDE INTO THE FUTURE: Laser keys, satellite maps and voice-controlled dashboards are heading your way. Discover what today's car makers have planned for you in tomorrow's cars.

TYPING TIP-OFF: The keyboard's the key to using most computers. So, to compute you need to know how to type. ENTER Youth Advisor Elizabeth Disney, 13, gets her hands on software that teaches typing and tells you what works.

ENTER'S PRESIDENTIAL POLL: Who did nearly 12,000 ENTER readers choose for president? Find out in the results of our poll—and learn how computers are affecting this fall's election.

PLUS: BASIC Training programs, BASIC Plus tips, and challenges for all popular home computers....New game reviews in *User Views,* software reviews in *Software Scanner*....Hot news in *News Beat, Show Beat* and *Pacesetters.*

ANSWERS

MICRO WORDS *(Page 61)*

F	L	O	W	C	H	A	R	T	■	H	T	S
O	■	N	E	O	■	H	E	■	M	O	V	E
R	E	E	D	I	T	■	S	T	O	P	■	T
T	■	O	■	N	I	N	E	■	B	E	D	S
R	U	N	S	■	M	E	T	S	■	■	A	■
A	■	E	A	S	E	■	■	T	E	X	T	■
N	O	■	L	O	X	■	S	A	Y	■	A	D
■	N	A	T	O	■	■	T	R	E	K	■	E
■	L	■	■	N	O	S	E	■	S	A	I	L
B	Y	T	E	■	P	E	N	S	■	Y	■	E
A	■	O	N	C	E	■	O	U	T	P	U	T
L	A	P	D	■	R	A	■	B	A	R	■	E
L	E	O	■	J	A	M	E	S	B	O	N	D

WINNERS!

The following 50 readers were winners of ENTER T-shirts in our INPUT Poll #4 drawing.

James Blaisdell, CA; Sharon Frost, PA; Earl Varner, IA; Stacy D. Davidson, PA; Jeremy Hargrove, KY; Laura Zalewski, MI; Lynnette Hover, NY; Jennifer Kerr, MI; Todd Motz, MA; Ari Kocen, TX; Kathleen M. Nolan, TX; Michele Woods, IN; Elizabeth Martin, WV; Danny Woods, CA; Orrie Gartner, NJ; Kumar Goundan, MI; Jeffrey Patterson, OR; John Thomas, AK; Tara Werner, NY; Aaron Reeves, CO; Donnie Curtis, KY; Lauren Shann, NY; James Scherbel, IL; Debbie McQuaide, OH; Patricia Falkenberg, WA; Erik Petersen, IL; Cindy LaVigne, WA; Ryan Stephens, TX; Bill Harris, NE; Andy Harrison, CT; Jennifer Johnson, TN; Peter Ellefson, MN; Julie Fox, WI; Tonya Alandres, OK; Mike Weaver, GA; Daniel McCluskey, PA; Jimmy Cuttino, NY; Elizabeth Adler, CA; Debbie Hagar, IL; Chad Lemons, MO; Shelly Ingram, OK; Ian Kaiser, PA; Michael Fahey, NY; Yvette Eshman, IL; Justin Liu, NY; Stephen Burr, GA; Brian Bontrager, OH; Carrie Berger, OH; Natalie Kosonocky, NJ; Pat Wall, MI.

If your parents complain that this is what all computer games are doing to you, they obviously don't know about Spinnaker.

With most computer games the biggest challenge isn't the game. It's keeping your parents from objecting to it.

Now, Spinnaker has the answer. It's called the Learning Adventure Series, and it's a whole bunch of great games that will challenge and inspire your imagination for hours. But won't inspire hours of complaining from your parents.

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So the next time your parents complain that computer games are turning you into a vegetable, tell them about Spinnaker's Learning Adventure Series.

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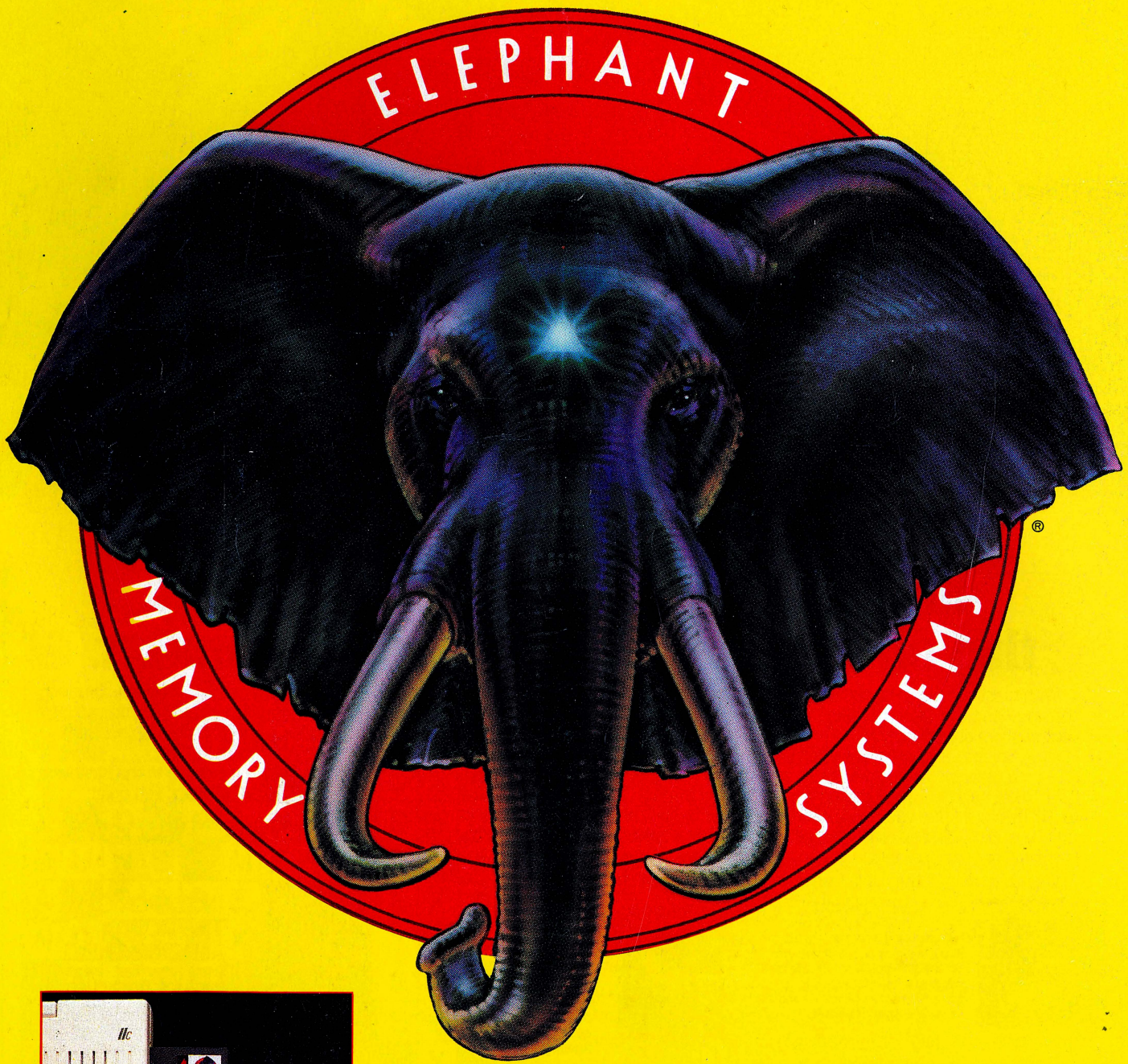

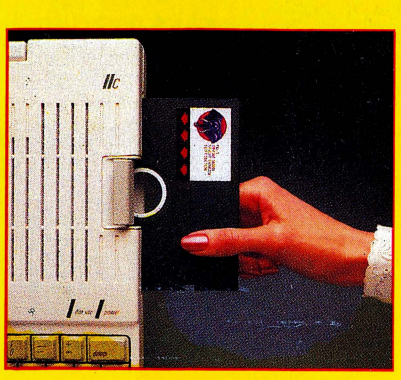

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